



A Process-Oriented Nuts and Bolts Tutorial for Implementing Manpower and Personnel Integration (MANPRINT) Evaluations

by Otto H. Heuckeroth

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A Process-Oriented Nuts and Bolts Tutorial for Implementing Manpower and Personnel Integration (MANPRINT) Evaluations

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14. ABSTRACT <p>Manpower and Personnel Integration (MANPRINT) type concerns for military and non-military systems under development have been of interest as long as man has been developing systems.</p> <p>In the mid 1980s, as the MANPRINT program was being formally developed, personnel who would implement this initiative received a 3-week training course on the more management-oriented aspects for MANPRINT. Following this training, those selected to conduct MANPRINT evaluations during operational testing had to work out the data-collection procedures. Our role to provide MANPRINT evaluations to each new emerging system made it necessary to continually adapt implementing methodology to conduct those evaluations.</p> <p>Initial impetus for this report followed a request by the Intelligence and Electronic Warfare Directorate (IEWTD) at Fort Huachuca to develop a tutorial on how MANPRINT evaluations could be implemented. While most MANPRINT Assessments do well in presenting problems identified (are <i>product</i>-oriented), they frequently are incomplete on the detailed data collection methodology—the specific <i>processes</i> used. Based upon the MANPRINT support procedures used (or developed) by the author since 1986 for several emerging systems, a group-oriented training tutorial on those processes was developed. Thanks to a formative review of this document by the Fort Hood Field Element Chief, the tutorial presented here has been redesigned for use by individuals.</p>					
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1. Introduction

Manpower and Personnel Integration (MANPRINT) type concerns have been around for a long time in many fields, but not by that name. The term “MANPRINT” came into being in 1984. Continued systemic problems during development, or following release of the system to soldiers in an operational environment, led to an initial focus on correction by increasing manpower, recruiting more talented soldiers, and enhancing training programs. It was recognized that this approach, by itself, was not leading to system designs that maximized soldier performance with the system. Optimizing on system performance also required focusing on human requirements within the system.

1.1 Development of MANPRINT Implementation

In the 1984–1985 timeframe, the search began for people who would implement MANPRINT type of evaluations. Among those selected to support this initiative after systems were developed was a cadre of research psychologists affiliated with the U.S. Army Research Institute (ARI). The U.S. Army had separate Test and Evaluation (T&E) organizations—entities for creation of new systems. One was responsible for supporting developmental testing; the other was responsible for supporting operational testing. During developmental testing, problems were identified and presumably corrected. Our role as a Field Element was to support the Test and Experimentation Command (TEXCOM) in its mission of conducting operational testing. As individuals responsible for MANPRINT evaluations, data collected during operational testing provided the U.S. Army with another look at the system closer to the time when it would be placed in the hands of the representative soldiers. Those data served as an additional opportunity to determine what problems continued to exist as the system began to be used in a more mission-oriented integrated form. In 1985–86, after MANPRINT had become formalized, people at several of the Field Elements (including ours) were sent back to the Washington area to take a 3-week course on life-cycle management of system development. This course covered the more management-oriented aspects of implementing MANPRINT. As one tasked to implement MANPRINT, much of the information imparted seemed “good to know,” but not particularly useful to our mission of planning and collecting MANPRINT type data. In those early days, our Field Element had about ten research psychologists and so we were able to divide ourselves up to support TEXCOM test directorates. As structured during this period, TEXCOM was responsible for planning and collecting test data on systems under test during the operational test phase; the Operational Test and Evaluation Command (OPTEC) was responsible for performing the evaluation with that data. In our role of providing support for TEXCOM, it was our role to plan and collect the MANPRINT type data. After the 3 weeks of management-oriented training, we

still had to work out the specific data collection and analysis procedures. In the 1986–1995 timeframe, our assignments in the MANPRINT arena were managed through a form of matrix management. When a system was under development and some form of operational testing—Limited User Test and Evaluation (LUTE), Initial Operational Test and Evaluation (IOTE) or a Follow-on Test and Evaluation (FOTE)—was being planned, our Field Element Chief approached us and indicated that we were being assigned to provide MANPRINT support for that test. While as individuals we were targeted to support systems from particular TEXCOM directorates, our assignments often crossed directorate lines. Once that test was completed, the analyst was then assigned to another system. This form of support with MANPRINT analysts did create some difficulties as there was always the need to become familiar with new systems; however, in perspective, it made us continually think about how we were going to implement the MANPRINT data collection and analysis effort for each specific emerging system. From that point on we were put in contact with the Test Officer (TO) for the system and he kept us apprised of test planning meetings and provided us with feedback to our emerging MANPRINT data collection plans. Historically (see TEXCOM memo 73-1, para 5-3a and figure 5-2, pp. 5-1 and 5-3) (*1*), the role of TEXCOM was to plan and collect Level 4 data (see table 1). To support TEXCOM, our role was generally to prepare a MANPRINT data collection plan, collect that data and summarize the data in one or more forms designated for Level 4 data.

1.2 Purpose

The purpose of this report is to provide an overview of MANPRINT and to explain with several examples how MANPRINT type data is collected and to identify some common analyses used during conduct of T&E efforts for emerging U.S. Army systems. As will be noted in this report, MANPRINT evaluations of emerging systems includes identification of both Training and Human Factors Engineering problems. Each of these areas of interest, in themselves, is comprised of their own body of theory and accompanying methodological procedures. This document is not developed to provide the concepts or summarize the methodology they employ, but rather to provide specific examples of how information can be collected within these and the other five domains of interest discussed below. As such, the MANPRINT analyst is an applications generalist with backgrounds largely in psychology and human factors engineering; methodology used involves techniques developed in large part within the social sciences, statistics and operations research. These analytic techniques have been acquired throughout the course of study in these respective fields and are adapted to address problems evolving in system-specific operational and maintenance procedures. This report provides a basis for developing some familiarity with MANPRINT implementing procedures. It is not reasonable to expect that this training will make you instant experts as MANPRINT analysts. The primary way you develop this expertise is to use and adapt the techniques and examples presented in this report while conducting MANPRINT evaluations to systems on which you have been assigned to provide MANPRINT support.

Table 1. First four levels of data.

Level	Description	Possible Forms	Examples of Content	Disposition
Level 1 data: “raw data”	Data in their original form. Results of field trials just as recorded.	Complete data collection sheets, exposed camera film, voice recording tapes, original instrumentation, magnetic tape or printouts, original videotapes, filled questionnaires, interview notes.	1. All reported target presentations and detection. 2. Clock times of all events. 3. Azimuth and vertical angle from each flash base for each flash. 4. Recording tapes of interviews.	Accumulated during trials for processing. Usually discarded after use. Not ordinarily given to another agency. Not published.
Level 2 data: “reduced data”	Data taken from the raw form and consolidated. Invalid or unnecessary data points deleted. Trials declared “no test” Deleted.	Confirmed and corrected data collection sheets, film with extraneous footage deleted, corrected tapes of printouts, and original raw data with “no test” events marked out.	1. Record of all valid detections. 2. Start and stop times of all applicable events. 3. Computed impact points of each round flashed. 4. Confirmed interview records.	Produced during processing. Usually discarded after use. Not published.
Level 3 data: “ordered data”	Data which have been checked for accuracy and arranged in convenient order for handling. Operations limited to counting and elementary arithmetic.	Spread sheets, tables, typed lists, ordered and labeled printouts, purified and ordered tape, edited film, edited magnetic tapes, ordered punch cards	1. Counts of detections arranged in sets showing conditions under which detections occurred. 2. Elapsed times by type events. 3. Impact points of rounds by condition under which fired. 4. Interview comments categorized by type.	Not usually published but made available to analysts. Usually stored in institutional data banks. All or part may be published as supplements to test report.
Level 4 data: “findings” or “summary statistics”	Data which have been summarized by elementary mathematical operations. Operations limited to descriptive summaries; no judgments or inferences. Does not go beyond what was observed in test.	Tables or graphs showing totals, means, medians, modes, maximums, minimums, quartiles, deciles, percentiles, curves, or standard deviations. Qualitative data in form of lists, histograms, counts by type, or summary statements.	1. Percentage of presentations detected. 2. Mean elapsed times. 3. Calculated probable errors about the centers of impact or conditions. 4. Bar graph showing relative frequency of each category of comment.	Published as the basic factual findings of test report.

2. Method

Following the beginning of the U.S. Army's Integrated Test and Evaluation (ITE) initiative around 1996, the author was assigned to provide MANPRINT support to one of the pilot systems—the All-Source Analysis System (ASAS) Block 2 (Modifications). With this assignment, greater continuity came in the system evaluation process as support shifted to different sub-systems of ASAS. From that point until the Block 2 IOTE in 2005, with one exception, MANPRINT support was for ASAS sub-systems.

In 1997, the Intelligence Directorate at Fort Huachuca contacted the Fort Hood Field Element and requested guidance on how to implement MANPRINT. With the sizable number of MANPRINT support efforts that had been conducted up through 1996, the immediate question asked was why those evaluation efforts could not be used as the basis for the guidance they sought. The answer derived largely from the distinction between reports that deal with the process—the specific ways the data are obtained—and those that focus on product—the identification of specific MANPRINT problems that follow from an assessment of findings from a body of reports that had addressed MANPRINT problems. As noted above, our early affiliation with TEXCOM led to more process-oriented expertise. For the most part, existing System Evaluation Reports (SER) detailed methodology about how those results were obtained—the process—was often lacking or presented with a “light brush.” Study of the findings presented in the more product-assessment-oriented reports can lead to identification of information types that need to be collected, but generally do not provide a clear picture of the instruments' structure or how they are used to collect that information. While procedures outlined in this tutorial are based on a sizable number of emerging systems that were under test, in the author's experience, there did not seem to be a single set of procedures for providing MANPRINT support. In some cases, the specific examples presented are system-specific (e.g., specific system operational and maintenance tasks) and are designed more to give the evolving MANPRINT analyst a feel for the type and level of detail reflected in the systems under study; in other cases, the information collected is generic and has direct applicability to multiple systems. It should be understood that the examples provided are just that—examples—and judgment must always be exercised.

This section provides an overview (or characterization) of MANPRINT. Also presented are MANPRINT models for evaluation and some recommended forms that can be used as beginning examples with each of those process-oriented models. Appendices provide some alternate data collection forms, cite alternative domain-specific detailed data collection areas, presents some of the more administrative procedures directly supporting the data collection implementation and provides a sample analysis that has been particularly useful in addressing soldier sample-representativeness. While the MANPRINT Analyst is involved in the data collection effort, it

should become clear that this person will not generally provide the same level of support for each domain (see AR 602-2, table 3-1, p 11) (2). That table indicates that the major proponenty for data collection in each of the domains is assigned according to the Acquisition Category (ACAT) and whether the system under test is an Integrated Concept Team (ICT) or an Integrated Product Team (IPT) test. For the most part, the primary responsibility of the MANPRINT analyst to whom this tutorial is directed is in the Human Factors Engineering domain. For the other domains, his responsibility is more that of a data collector and observer who reports problems that appear to be attributed to a domain. In those cases, the major proponent's responsibility is to review and validate this data and include it in his assessment with his analyses. In those cases, the pieces of information reported by the MANPRINT Analyst are combined with more detailed data collected and, according to the “intersect theory of assessment” (3), serve as confirmation (or contradiction) to the proponent's data collection and analysis efforts.

This tutorial was originally designed to be presented to groups of individuals who desired “heads-up” training as MANPRINT analysts; however, in this presentation, the material has been restructured to be better suited for individual review and orientation. This restructuring was completed with the recognition that those who might serve as facilitators for training several individuals probably have a level of expertise in MANPRINT evaluation that they would prefer to use and in a manner more suited to their experiences. Like the proverbial “blind men trying to describe an elephant,” different people will have differing opinions.

2.1 Characterization of MANPRINT

MANPRINT has been defined as Manpower and Personnel Integration. At present, MANPRINT is characterized by seven domains, or areas of interest. Discussion in this section provides a more general description of matters and issues addressed in each of these areas of interest.

2.1.1 Manpower Domain

Within this area of interest, the basic question addressed is: Are there enough soldiers to operate and maintain the system? Factors addressed when considering this area are the workload and types of job stress associated with performing system specific critical tasks. Other sources of problems that may be related to the Manpower Domain are based on soldiers' judgments about the probable causes for reported problems.

The definition of manpower in terms of the Training and Doctrine Command (TRADOC) Systems Manager (TSM) and Combat Developer (CD) is to provide the guidelines of how many people the system needs to be operated and maintained. MANPRINT analysts don't actually set any requirements. The MANPRINT analyst looks at what the operators and maintainers' performance evidences (usually through reported problems and performance deficiencies) and then makes a judgment about whether the U.S. Army should rethink how many soldiers they need to do the job—operate and maintain the system. That information is provided to the U.S. Army Test and Evaluation Command (ATEC) with supporting rationale.

2.1.2 Personnel Domain

Within this area of interest, there are three major questions addressed: (1) Do we have the right type of soldiers “manning” the system (MOS/skill level)?; (2) Are soldiers participating in developmental tests among the best of those who will operate and maintain the system?

Comments of those soldiers are needed to identify problems with the system that may be especially troublesome for the average soldier and to motivate systemic changes in procedures and/or equipment before it is placed in the hands of the representative soldier; and (3) Are the test players in the Operational Test representative of the target audience for whom the system is intended? The MOS selected for the system under study are generally those who had been operating and maintaining the predecessor system. This domain addresses whether those soldiers have the appropriate abilities and the right skills. When soldiers report a particular problem may have occurred because the “right” type of soldiers are not “manning” the system, this suggests that the source of the problem may be attributed to the Personnel Domain (4). In developmental testing, it is best to use “golden crews.” In earlier tests and evaluations, it had been noted that these superior crews were sometimes used in operational testing and had the consequences of making the system appear better than it turned out to be when it was placed in the hands of the more representative soldier. Those are the people you want in developmental testing because they will identify the problems that exist in the system and are likely to cause problems for the typical soldiers who will operate and maintain the system. In an operational test, you want representative (“typical”) soldiers. To make that kind of judgment, procedures for determining what representative means must be developed. Addressing the latter two major questions involves exploring the demographic background characteristics and ability measures like Armed Services Vocational Aptitude Battery (ASVAB) scores of the selected soldiers and comparing them with those exhibited by the ones who operated and maintained the predecessor system.

Major resources used to make comparisons between the test sample selected and the population (target audience) for whom the intended system is being designed involves contacting a Department of Defense repository of this information. Previous efforts have indicated that the Defense Manpower Data Center (DMDC) in Monterey, CA, is a responsive source. Following September 11, DMDC reorganized and new emerging procedures have been established for obtaining demographic data and ASVAB scores for active duty enlisted soldiers and demographic data for active duty officers.

Details for contacting DMDC include the following information:

- Initial POC: Michelle Rudolph, Branch Chief for Personnel and Manpower
- Phone: (831) 583-2400; DSN 878-2951; FAX (831) 583-2340
- Address: DMDC, DOD Center, Monterey Bay, Seaside, CA 93955-6771
- Establish Request: Data Request System (DRS): <https://www.dmdc.osd.mil/drs/>
- Enter: DMDC Assigned Name and Password
- Enter: Request Title
- Choose Subject: e.g., Accessions
- Check Groups: e.g., Active Duty Military and MEPCOM
- Enter Detailed Description: “Support MANPRINT Assessment in Personnel Domain for the _____ System”
 - Reference memorandum documenting request (sample presented in appendix A).
 - When contacted by DMDC analyst, reference that analyst in the memo ATTN line.

Appendix B provides a sample of how information provided by DMDC can be used to address the sample representativeness of the soldiers participating in an operational test.

2.1.3 Training Domain

Within this area of interest, the major question addressed is the adequacy of the training provided to soldiers to operate and maintain the system. The major parameters addressed in a training evaluation include:

1. What is being trained
 - a. Individual tasks
 - b. Collective tasks
2. What is the type of training evaluation
 - a. Process
 - i. Training environment adequacy
 - ii. Instructional/learning difficulties

- b. Product
 - i. Performance (critical task time and error)
 - ii. Soldier problem reports
- 3. When does the training evaluation occur
 - a. Training Classroom
 - b. Collective Training environment (prior to Record Test)
 - c. Mission Enclave (at end of Record Test)

The evaluation focuses on both individual tasks--more generally the procedures for manipulation of system software—and collective tasks—more generally the mission-oriented tasks that are affected by performing sequences of individual tasks in specific orders. In teaching each of these types of tasks, process and product evaluations are conceptually possible. In the process evaluation, there is generally an examination of the adequacy of the training environment and review of instructional and learning difficulties. In the product evaluation, tasks' performance (time and error scores) are reviewed to permit a judgment about deficiencies in the method of instruction or specific reasons soldiers experience learning difficulties. In the training environments (classroom and mission facilities), product evaluation may include hands-on exercises and/or performance-based written tests. During the test where soldiers are performing in a mission-oriented environment, they are asked to make judgments about their performance and indicate causes for performance difficulties. Those causes can be attributed to one or more domains, and problems experienced in one domain may be caused by problems in another domain.

2.1.4 Human Factors Engineering Domain (5–7)

Within this area of interest, three basic questions about the operational and maintenance procedures asked of the emerging system include: (1) Is the equipment/hardware difficult or complicated to use by the soldier?; (2) Are there problems with the software used in the system?; and (3) Are there problems with the procedures?

Evaluation within this domain focuses on hardware/software interface problems used to complete system-required individual and collective tasks. Method of evaluation within this domain generally varies from mapping soldiers' description of problems with different critical tasks, presented as apparent causes for problems, to use of a whole host of different surveys.

Those surveys may focus on equipment components and their physical characteristics, such as those included in appendices C (8) and D (9). They may also focus on menus and pull-down menus, procedures, function-specific software actions, or specific soldier physical dimensions. In those surveys, judgments about these areas of focus may ask about their level of adequacy or effectiveness. Where judgments are negative, soldiers are encouraged to describe the reasons on the survey form or in scheduled follow-up interviews. Many of the systems used today have computer equipment and software to complete MOS-based tasks. In some sense, completing those tasks as they were originally trained--in a “manual” (or analogue) mode (without a computer) involved different sets of activities (procedures) that often do not parallel those that are required when those tasks are completed with a series of computer manipulations using the software. This lack of parallelism can create problems in both learning and executing the intended tasks so that they are consistent with how the soldier conceptually thinks about completing the tasks to perform mission objectives. Many times, the procedures for completing the mission without automation are quite different from those used when there is computer augmentation.

2.1.5 Health Hazards Domain (10, 11)

Within this area of interest, the major question asked is: Does operation or maintenance of the system effect soldier safety? For both this domain and the next, soldiers' reports of problems operating and maintaining the equipment and Test Incident Reports (TIRs) serve as the two primary sources of data collected by the MANPRINT Analyst that tend to serve as confirmation of known problems or initial identification of problems needing further exploration.

2.1.6 System Safety Domain (10, 11)

Within this area of interest, the major question asked is: Does operation or maintenance of the system affect safety of the system?

2.1.7 Soldier Survivability Domain

Within this area of interest, the MANPRINT analyst focuses on soldiers' operational and maintenance problems while wearing Mission Oriented Protective Posture (MOPP) gear. Four additional areas of interest within this domain include: (1) Nuclear Survivability Testing; (2) Biological and Chemical Survivability Testing; (3) Information Warfare Testing; and (4) Electronic Warfare Testing. As the MANPRINT analyst generally does not have either the specific skills or equipment to address these latter areas of interest, their assessment usually is coordinated with the U.S. Army Research Laboratory (ARL) Survivability/Lethality Analysis Directorate (SLAD) and ATEC.

2.2 MANPRINT Models for Evaluation

Based on review of the MANPRINT evaluation data collected primarily by the author for several systems (mostly in the 1986–1995 period), it seemed that the procedures used could generally be characterized as one of four types. Table 2 shows these four types (models) as a consequence of two factors: (1) Availability of System Critical Tasks and (2) Level of Verbal Skills of those for whom the system was designed. Superscripts in table 3 are footnote references for sample systems shown in table 2 that identify general planning factors for conducting the MANPRINT evaluation; for the Heavy Equipment Transporter System (HETS) IOTE the superscript also indicates the multiplier effect of providing additional support to the MANPRINT data collection effort—“what you can do with the resources you’ve got.” In most cases, entries in this matrix are the names of the systems under test for which the indicated MANPRINT Evaluation model was used by the author. While these factors are helpful to provide initial direction on which MANPRINT model to use in an evaluation effort, it is important to remember that “every test is different.”

Table 2. Models for MANPRINT evaluation (but “every test is different”).

	High Verbal Skills	Low Verbal Skills
Critical Tasks Available	Model 1 Various ASAS LUTE and Block 2 IOTE ^a (16)	Model 2 HETS IOTE ^b (13) Enhanced Position Location Reporting System (EPLRS) IOTE ^c (17)
Critical Tasks NOT Available	Model 3 War Fighting Rapid Acquisition Program (WRAP): ASAS ^d (12)	Model 4 M1A2 ^e (14) Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) ^f (15)

Note: Footnotes a–f are explained in table 3.

Citations for the systems listed in table 2 are presented in the references section (12–17). Data collection procedures employed for the MANPRINT Evaluations with each model follow from consideration of the characteristics defining the model and the resources/conditions existing for the system being evaluated. The body of this report explains the more salient features of the different data collection procedures for each model. In addition to this discussion, several appendices are used to present alternative forms—some requesting information across MANPRINT Domains, others requesting more detailed type of information from specific domains. While MANPRINT Analysis Results are usually presented by the MANPRINT Domain, events leading up to the Record Test have a logical sequence and tend to direct the order in which data collection proceeds. As the purpose of this paper is to guide the planning for implementing MANPRINT data collection, the focus of this tutorial is on sample forms used within each model in the order that they are used.

Table 3. Footnotes referenced in table 2.

Footnote	Model	Who	Test	Respondents	Test Parameters	MANPRINT Support Team	MANPRINT Functions Provided
a	1	OHH	Various ASAS LUTE and Block 2 IOTE	40 (half being data collectors)	5–6 days	1 GS12 (MGR)	Develop DC plan Design DC instruments Collect and process data Provide analyses specs Write report (input to TER)
b	2	OHH	HETS-IOTE	50 (half being data collectors)	6 months	1 GS12 (MGR) 1 contractor w/sys knowledge and data processing skills 1 Temp w/yr of test experience	Develop DC plan Design DC Instruments Collect and Process Data Data Analysis Write Report (input to TR)
c	2	OHH	EPLRS-IOTE	200 soldiers, variety of MOSs and skill levels	1 month 3 phases	1 GS12 (MGR) 3 GS5 temps 1 experienced 4 military	Develop DC Plan Design DC instruments collect and process data Provide OEC validated Level 3 Database
d	3	OHH	WRAP: ASAS	10 soldiers	3 days	1 GS12	Develop DC plan Design DC instruments Collect and process data Report findings
e	4	NDS	M1A2-IOTE	80 armor MOS	4 months 2 phases	1 GS13 (MGR) 1 Temp (CHF) Senior retired NCO w/sys experience, 4 temps Ret senior NCOs Background in system TEXCOM did data entry	Develop DC plan Design DC instruments Collect and process data Provide OEC Validated Level 3 database
f	4	OHH	SMART-T	30 soldiers	3 days	1 GS12	Develop DC plan Design DC instruments Collect and process data report findings

2.3 Resources and Data Collection Procedures for Conducting MANPRINT Evaluations With Four Different Models

The MANPRINT Evaluation models have been presented in table 2. Entries within this table are, with one exception, systems for which the author was requested to provide MANPRINT support. Models 2 and 4 were used to support MANPRINT evaluations for two systems each. In each case, systems supported by these evaluation models have similarities, but differ in the resources available and (for model 2) the conditions of testing (see table 3).

2.3.1 Use of Model 1 for MANPRINT Evaluation of the All-Source Analysis System (ASAS)

The model designated as model 1 appears to work well with soldiers who have high verbal skills—like those who operate and maintain the All Source and Analysis System (ASAS)—when individual and collective tasks have been identified. When approaching a new system to conduct a MANPRINT evaluation, it is important to make a judgment about the verbal skill of the soldiers with whom you will be dealing and whether or not system trainers can provide you with a list of critical tasks used by the system.

2.3.1.1 Resources Used for MANPRINT Evaluation of ASAS. There were about 40 system participants—half of whom were data collectors—for a 5–6-day test. Except for the New Equipment Test Team (NETT) instructors, all respondents were soldiers assigned a relevant Military Intelligence (MI) Military Occupational Specialty (MOS). The MANPRINT support team—the resources available to conduct the MANPRINT evaluation—involved just one MANPRINT analyst. What was one MANPRINT analyst able to do? He drew up the data collection plans, designed the data collection instruments, collected and processed the data, analyzed the data and wrote draft MANPRINT input for the System Analysis Report (SAR) and System Evaluation Report (SER).

2.3.1.2 Data Collection Procedures for MANPRINT Evaluation of ASAS. In implementing the MANPRINT evaluation using Model 1, it was frequently helpful to develop an Event Design Plan (EDP) to guide the progression of the evaluation events. An example of this plan is shown in table 4. That table was developed specifically to support an assessment for an ASAS test. Comparable tables were developed for each of the ASAS tests supported (LUTEs and the Block 2 IOTE). It provided a simple way to guide what data is needed, when to collect it and from whom to collect it. Samples of the forms used are presented in the same sequence that they are presented in this EDP. The first column in this EDP is the Form Name. File names identify the particular instrument. In this test, there were several functionalities; those are listed in the second column. The third column refers to the time when you use each form. The fourth column indicates who are to provide responses to items on this form, and the last column is the purpose of using the instruments. As already noted the purpose of this paper is to direct the planning for implementing MANPRINT data collection, the focus of this presentation is on sample forms used within each model in the order that they are used.

Table 4. Event design plan (EDP) for the all-source analysis system (ASAS) block 2 Remote Work Station (RWS) limited user test and evaluation (LUTE) data collection plan.

Form Name	Critical Task List	Time Used	Respondents	Purpose
Training Evaluation Debrief (TADB_RWS.WP6) (TADB_AMR.WP6) (TADB_EAR.WP6) (TADB_SAR.WP6)	Remote Work Station-RWS Asset Management ELINT Analysis System Administration	At end of each week for each instructional block for each set of students	Analysts Data Collectors Instructors	Identify tasks on which training problems exist
ASAS Training Process Questionnaire (AS_TNG_Q.WP6)	All Critical Tasks	At end of each instructional block for each set of students Used with (after) completing "Training Assessment Debrief"	Analysts Data Collectors	Document problems identified during training
Demographic Questionnaire (PLYSDEMR.WP6)	—	At beginning of training	Analysts Data Collectors	Document who are analysts and data collectors
MANPRINT Debrief (DB_RWS.WP6) (DB_AMR.WP6) (DB_EAR.WP6) (DB_SAR.WP6)	Remote Work Station-RWS Asset Management ELINT Analysis System Administration	At end of each test day (Pilot & Record Test)	Analysts Data Collectors	Document tasks performed and those which were problematic
MANPRINT Evaluation (MP_ASSMR.WP6)	—	Used in conjunction with (after) "MANPRINT Debrief". One form completed for each problem report--at end of each test day (Pilot & Record Test)	Analysts Data Collectors	Provide detailed ratings and comments on problematic tasks for the six original domains of MANPRINT

Table 4. Event design plan (EDP) for the all-source analysis system (ASAS) block 2 Remote Work Station (RWS) limited user test and evaluation (LUTE) data collection plan (continued).

Form Name	Critical Task List	Time Used	Respondents	Purpose
ASAS Human Factors Engineering (General Software Functioning) questionnaire (OEC provided--61 items) (SSHFEQ.WP6)	—	Final Debrief--day after last Record Test day	Analysts Data Collectors	Assess human factors problems
ASAS Human Factors Engineering (Function-Specific) Questionnaire for each ASAS Function	RWSHFEEFunctionsSpecificquestions.doc AssetManagementHFEEFunctionsSpecificquestions.doc ELINTHFEEFunctionsSpecificquestions.doc COMINTHFEEFunctionsSpecificquestions.doc SystemAdministrationHFEEFunctionsSpecificquestions.doc	Final Debrief--day after last Record Test day	Analysts Data Collectors	Final problem report on system use
ASAS Interoperability Problems	interop3-ace_iote_blk2.doc	Final Debrief--day after last Record Test day	Analysts Data Collectors	Document problems receiving/sending different message types (intra/inter BFA)
Final Debrief ASAS Single Source Operator /Analyst Questionnaire (SSOAR.WP6)	—	Final Debrief--day after last Record Test day	Analysts	Final problem report on system use
Final Debrief ASAS Single Source Data Collector Questionnaire (SSDCR.WP6)	—	Final Debrief--day after last Record Test Day	Data Collectors	Final problem report on system use

2.3.1.2.1 Training Evaluation Debrief (table 5). The instruments in the first row, first column of table 4 are for part of the training process evaluation in the four ASAS functionalities being addressed. The sample of this form references tasks for the Remote Work Station (RWS) Functionality. They are recommended for use at the end of each week for an instructional block of training for each set of students. The MANPRINT Analyst needs to coordinate with the NETT leader to determine, when exactly, would be the best time to come in and survey these soldiers and to indicate those tasks that had been trained during that week. Conducting surveys, at least on a weekly basis, is desirable so that soldiers who have a problem can provide relatively fresh knowledge about it; otherwise new problems tend to merge with the old and then tend to be forgotten.

2.3.1.2.2 Training Process Questionnaire. The second row, first column of table 4 lists an evaluation instrument designed to address the training process. This form specifically addresses different aspects of the training environment. It has been generally an instrument used at the end of each instructional block for NETT (individual tasks) type of training—in contrast to weekly as with the training evaluation debriefs. Potentially, analysts, data collectors and instructors can all provide information about the training evaluation at the individual critical task level. The analysts and data collectors are probably the ones who can provide the most valid information about the training environment. They can document problems that arose during training.

In appendix F, another version of this training questionnaire used during the Maneuver Control System (MCS) IOTE is presented (18).

2.3.1.2.3 Demographic Questionnaire. It's not clear that there's any best time to administer the demographic questionnaire—see row 3, column 1 of the first page of table 4. Part of the reason for administering it at the beginning of training derives from the understanding that, in implementing MANPRINT, there is a lot of “paperwork” to be completed. If, without jeopardizing your data collection effort, forms and surveys are distributed throughout the entire data collection effort to minimize the amount of “pain” the soldiers have to experience and make it easier for the Test Officer to accommodate the data collection intrusions throughout the test.

CLASSROOM
NETT TRAINING EVALUATION DEBRIEF
ASAS BLOCK 2 OPERATIONAL TEST
RWS V6.3

Name _____	PIN no. _____
(last 4 SSN)	
Please Circle Equipment Used:	Date _____
HCU VCU	
MOS _____	Rank _____

Instructions

Respond for each task:

1. Most listed TASKS have performance steps (in parentheses following TASK NAME) you could perform in completing the TASK. These steps are shown to help you focus on the aspect(s) of the task that may have been difficult (to learn or requiring instruction modification).
2. Circle Y in INSTRUCTIONAL DIFFICULTIES column (Analysts) if there appeared to be difficulties in training this task by the instructor. If there are no problems, leave uncircled.
3. Circle Y in the LEARNING DIFFICULTIES column if you (the Analyst being trained) experienced some difficulty in learning this task. If there are no problems, leave uncircled.
4. If you think you know the cause of the DIFFICULTY (Instructional or Learning), use the back of this sheet or attached sheet to respond. Indicate: (1)TASK NO; (2)Particular performance step creating difficulty; and (3) your response. Among the many possible causes for the difficulty might have been: (1) Software/hardware problems, (2) instructor teaching technique/preparation, (3) lack of repetition or PEs, (4) classroom setup, noise or distractions, (5) task complexity, (6) manuals, ... Others may exist.

Table 5. Training evaluation debrief data collection.

Task No.	Task Name	Instructional Difficulties	Learning Difficulties
RWS-0001	Assemble the RWS	Y	Y
RWS-0002	Configure the RWS for Operations [A)Boot RWS, B)As Standalone w/wo TOCBS, C)/As Master w/wo TOCBS, D)As Client w/wo TOCBS, D)As Client w/wo TOCBS]	Y	Y
RWS-0003	Initialize the ASAS-RWS Software [SELECT: A)Functional Identities, B)Time Zones, C)Start Option Radio Button, D)Configuration, E)Initialization Button]	Y	Y
RWS-0004	Log on to The RWS System	Y	Y
RWS-0005	Perform Shift Change Procedures	Y	Y
RWS-0006	Terminate System Operations [A)Stop-A/Control Break]	Y	Y
RWS-0007	Disassemble the RWS	Y	Y
RWS-0009	Perform Desktop Tools Menu Operations [A)Set Display Filters, B)Enable/Disable Alarms, C)Select Profiles, D)Mount Floppy Disk/CD ROM/Optical Disk, E)Format Floppy Disk/Optical Disk]	Y	Y
RWS-0010	Perform Printer Management and Hardcopy Services [A)Window, B)Screen, C)Window to file, D)Remove print job from queue, E)Administer print labels, F)Display printer status, G)Select user default printer, H)Add/Delete printer, I)Change IP Address, J)Printer Diagnostics]	Y	Y
RWS-0011	Perform File Browser Functions [A)Delete/Move/Copy/Change Permissions, B)Change Access Control Settings, C)Access Files in SunPCi Environment]	Y	Y
RWS-0012	Save Screens or Windows to Files	Y	Y
RWS-0013	Configure ASAS-RWS Nodes A)Add/Delete/Modify Node Information (Intel Ops State), B)Allow/Prohibit Client Node Host Automatic Processes	Y	Y
RWS-0016	Select Country Codes [A)Search/Set Preferences]	Y	Y
RWS-0021	Use COE Office Products [A)Start/Shut Down Sun PCi Environment, b)Access Microsoft Word/Excel/PowerPoint	Y	Y
RWS-0022	Collaborate Using Sunforum [A)Launch SunForum, B)Connect to Work Station/Send Files/Chat, C)Share System Windows, D)Use Whiteboard]	Y	Y
RWS-0023	Change Nickname/Codeword	Y	Y
RWS-0025	Perform On-Line Operations [A)Access WWW Browser, B)Find and Return to Pages, C)Open New Navigator Window/Display Content, D>Create Simultaneous Network Connections/New Page, E)Search for Information]	Y	Y

Table 5. Training evaluation debrief data collection (continued).

Task No.	Task Name	Instructional Difficulties	Learning Difficulties
RWS-0100	Perform Security Audit Trail(SAT) [A)Set Filters, B)Collect SAT Data, C)Generate/Delete/Print SAT Reports, D)Archive/Purge/Restore Files]	Y	Y
RWS-0101	Change System Security Parameters [A)High Water Mark(HWM), B)HWM with Classified Help, C)Shift Change Maximum Time/Screen Saver Time]	Y	Y
RWS-0102	Maintain User Accounts and Profiles [A)Create/Modify/Delete/Disable, B)Edit Account Profile Management(APM), C)Assign/Change Password]	Y	Y
RWS-0103	Control System Process Operations [A)Monitor Process Status, B)Disable/Enable/Restart Processes]	Y	Y
RWS-0200	Perform Comms Message Processor(CMP)Functions [A)Designate/Start/Monitor a CMP]	Y	Y
RWS-0201	Perform Messaging Using CMP [A)Launch Messaging Tools, B)Confirm Connections, C)Set Message Wrapper Defaults, D)Send/Edit/Review/Archive a Message with CMP, E)Select/Use Message Filter, F)Use Message Handling Table]	Y	Y
RWS-0202	Produce Enemy Interoperability Messages(EIM) [A)Configure EIM for Automatic/Manual Release, B)Modify/Disable a Destination for EIM, C)Generate EIM from Entity Operations, D)Generate an S507 Resources Logistics Message]	Y	Y
RWS-0203	Control Message Release Authority(MRA) [A)Enable/Disable MRA, B)Process a Message]	Y	Y
RWS-0204	Prepare Input/Output Media [A)Load from Input Media, B)Save to Output Media]	Y	Y
RWS-0205	Send a Message Manually [A)Prepare/Send(Release), B)Add Addressee]	Y	Y
RWS-0206	Process an Inbound Message [A)Interactive Message Parsing, B)Text Message Processing, C)Message Criteria Alert Processing]	Y	Y
RWS-0207	Manage Files Using X-FTP [A)Access X-FTP, B)Connect/Disconnect to Destination, C)File Management]	Y	Y
RWS-0208	Perform Address Group Maintenance [A)Create/Delete/Maintain]	Y	Y
RWS-0210	Perform Analyst Mail Functions [A)Create Address Book from TOCBS, B)Send Mail]	Y	Y
RWS-0211	Process Anomalous Messages [A)Add Classified Alias for Single Message/Message Processing, B)Recheck/Delete]	Y	Y

Table 5. Training evaluation debrief data collection (continued).

Task No.	Task Name	Instructional Difficulties	Learning Difficulties
RWS-0212	Communicate Using Chatter [A)Initiate/Answer Chatter Call]	Y	Y
RWS-0213	Perform Message Journal Review	Y	Y
RWS-0214	Perform Address Maintenance [A)Create/Modify/Add Address Information, B)Change Data Transfer Method Preferences, C)Make Global Changes to System Types, D)Use Destination Addressing]	Y	Y
RWS-0301	Monitor The Network Operational Status [A)Access Tool, B)Map Network/Save, C)Modify Network Node Attributes/Map Display]	Y	Y
RWS-0302	Access Remote Hosts	Y	Y
RWS-0305	Modify Network Configuration [A)Network Configuration Management Functions]	Y	Y
RWS-0400	Create Alert Criteria Development Sets [A)Criteria Record, B)Activate/Deactivate Criteria Set/Record, C)Update Criteria Record, D)Set Analyst Preferences and Filters (APAF)]	Y	Y
RWS-0401	Create Message Criteria Development Sets Using The RWS [A)Create Standing Request for Information(SRI), B)Stop/Start Message Criteria Processing, C)Process a SRI Alert]	Y	Y
RWS-0402	Perform Alert Operations--Data Criteria Alerts(DCA) [A)Acknowledge a Data Criteria Alert, B)Plot an Entity from Data Criteria Alerts Window, C)Generate/Transmit DCA]	Y	Y
RWS-0404	Post and Manage Imagery Related Intel Products Using ELT/4000 [A)Create Graphic Image, B)View/Manipulate Image Using ELT/4000, C)Download Secondary Imagery, D)Display Camera Icon, E)Register Image to Map, F)Import a Textual INTSUM, G)Display Image Icon and Its Footprint to a Map, H)Sort Image File, I)Set View for Image File, J)Delete Image File, K)Disseminate SID via E-Mail]	Y	Y
RWS-0405	Process Candidates for Specific Correlation [A)Open Specific Correlation Interactive Window, B)Set Display of Records, C)Insert Records into ASCDB, D)Retrieve Candidates for Correlation, E)Forward a Record for Alternate Processing, F)Remove Candidate from Display, G)Combine Records]	Y	Y
RWS-0406	Develop the Collection Plan [A)Create, B)Send/Receive Plan/Synchronization Matrix, C)Share Collection Plan in Multinode Environment]	Y	Y
RWS-0407	Develop the Intelligence Synchronization Matrix(SM) [A)Create SM, B)Generate/Transmit Multiple Asset Tasking Message(MATM)]	Y	Y

Table 5. Training evaluation debrief data collection (continued).

Task No.	Task Name	Instructional Difficulties	Learning Difficulties
RWS-0408	Develop a Doctrinal Template(DT) [A)Take Entities on the Map, B)Plot DT to Map, C)Create Situational Template from DT/Observations on Map and Both Sources, D)Create an Event and Decision Support Template]	Y	Y
RWS-0410	Perform ASAS Overlay Operations [A)Create/Load/Open/Send/Export/Import Overlays, B)Make Overlay Available for MCO]	Y	Y
RWS-0411	Perform CTP/Overlay Operations [A)Start the Common Tactical Picture Application, B)Create a New Chart Tab, C)Set a Chart Tab to Archive in Overlay Explorer, D)Create Plan/Overlay in the Overlay Explorer, E)Add Objects to Plan/Overlay, F)Save/Remove/Delete Overlay, G)Create a SA Overlay in Overlay Explorer, H)Create SA Overlay for Enemy/Friendly Unit Information in Overlay Explorer, I)Edit CP Filter, J)Save Changes in Overlay Explorer, K)Open Palette, L)Select Palette, M)Create New Palette, N)Access Symbol's Definition, O)Select Multi Point Symbols, P)Create/Edit /Save/Delete Symbol, Q)Plot Symbols to Map from Milsym Manager Window, R)Move Single/Multiple Symbols, S)Edit Objects on Map, T)Close CTP Application]	Y	Y
RWS-0412	Manipulate Battlefield Geometry [A)Create Friendly/Enemy Control Measure, B)Edit Control Measure, C)Send S201 Geometry Message]	Y	Y
RWS-0413	Maintain Geographical Areas [A)Create/Edit/Delete]	Y	Y
RWS-0500	Perform Entity Operations [A)Select Entities from Map Window(Manually/Using Criteria), B)Remove Entity Graphics, C)Restore Entity Location, D)Center Map, E)Query Database, F)Update/Insert/Edit/Delete/Associate/Combine Entities in Database, G)Generate Messages]	Y	Y
RWS-0501	Display Entity History	Y	Y
RWS-0502	Perform Map Operations [A)Launch JMTK, B)Save Map Area, C)Recall Map Area, D)Create JMTK Snapshot, E)Change Map Properties, F)Change Map Properties, G)Display Map Contours(Terrain/Bottom), H)Adjust Map Display Intensity, I)Recenter Map Display, J)Display Center Marker, K)Change Map Display Scale(Zooming), L)Display Grid Lines on Map Display, M)Load Map Data from CD ROM, N)Perform Quick Plot Operations, O)Perform Coordinate Conversion, P)Set Display Preferences]	Y	Y

Table 5. Training evaluation debrief data collection (continued).

Task No.	Task Name	Instructional Difficulties	Learning Difficulties
RWS-0600	Execute Database Operations [A)Perform Forms-Based Database Query, B)Perform Expert Query(SQL-Based), C)Save Query, D)Save Results of Query, E)Load Query, F)Print Matrix Results of Query, G)Print Saved Query/Results, H)Plot Query Results, I)Center Map to Selected Query Results, J)Update Record, K)Customize Display of Query Results, L)Convert Coordinates, M)Set Default Map for Map Operations from Query, N)Create Entity(Long/Short Form), O)Create Damage Assessment/Control Measures, P)Access Geographical Areas and Query, Q)Retrieve Message for Queried Item, R)Generate Messages]	Y	Y
RWS-0601	Create Database Entities	Y	Y
RWS-0603	Combine Entities [A)Combined Plotted Entities from Map, B)Change Views/Fields]	Y	Y
RWS-0604	Maintain Enemy Order of Battle Tables [CREATE: A)New Facility Types, B)Facility Alias, C)Equipment Alias, D)New Equipment Type, E)New Force Type, F)New Major Branch Type, G)New Unit Identification Alias, H)New Unit Number Alias, I)New Organization Type, J)New Echelon Type, K)New Functional Role Type, L)New Radio Type, M)New Radio Alias, N)New Radar Type, O)Radar Alias, P)Select Classification Abbreviation]	Y	Y
RWS-0605	Perform Parser Table Maintenance [MAINTAIN TABLES: A)Readdress, B)Auto Discard, C)Inbound Routing, D)Auto Forward Criteria, E)Auto Forward List]	Y	Y
RWS-0606	Associate Entities	Y	Y
RWS-0607	Set Criteria for Redundancy Checking of Incoming Messages [CREATE:A)New Set of Search Parameters for Redundancy Checking, B)New Record for Redundancy Checking, C)New Set of Rules for Specific Correlation, D)New Combination Methods Set/Record, ACTIVATE: E)Set of Search Parameters, F)Set of Specific Correlation Rules, G)New Combination Methods Set, H)Change/Deactivate Combination Methods]	Y	Y
RWS-0608	Maintain Country Code Tables [A)Search/Add/Modify Country Code]	Y	Y
RWS-0609	Query the Database Via WWW	Y	Y
RWS-0610	Navigate the Table Maintenance User Interface	Y	Y
RWS-0612	Maintain Message Parsing Tables [A)Maintain Geographic Reference and Message Datum Tables]	Y	Y

Table 5. Training evaluation debrief data collection (continued).

Task No.	Task Name	Instructional Difficulties	Learning Difficulties
RWS-0613	Maintain User Defined Database [A)Create a New Table, B)Create/Delete/Modify Attributes for a Table, C)Select Existing Value Set, D)Create New Value Set, E)Publish User Defined Table, F)Delete User Defined Tables(Published/Not Published), G)Modify Privileges in a Table, H)Access Table Maintenance for User Defined Databases, I)Input Data to User Defined Table]	Y	Y
RWS-0614	Use Table Maintenance Miscellaneous Functions	Y	Y
RWS-0615	Establish JCDB Criteria [A)Access JCDB Criteria, B)Deactivate Auto Forward of ASCDB Data to JCDB, C)Establish Criteria for Forwarding Data to JCDB]	Y	Y
RWS-0616	Perform External Database Coordination (EDC) Synchronization [A)Request an EDC, B)Auto Forward an EDC, C)Manually Define Criteria, D)Send an EDC]	Y	Y
RWS-0617	Archive, Purge, and Restore Data	Y	Y
RWS-0700	Process Target Criteria(D281) Messages [A)Review/Delete Target Criteria, B)Associate TIDAT from Alerts, C)Plot Target Criteria Area from Alerts, D)Create Alert Criteria]	Y	Y
RWS-0701	Build and Manage Target Sheets [A)Create/Delete/Edit Target Sheet, B)Create Alert Criteria]	Y	Y
RWS-0702	Nominate Targets [A)Nominate Target from Active Target List Processing Queue/Database Operations]	Y	Y
RWS-0703	Maintain Target Parameters [A)Set Target Parameters, B)Establish/Maintain Target Number Block]	Y	Y
RWS-0704	Process Target Coordination Messages [A)Process Target Coordination Request from Alert/Directory, B)Register Target Coordination Request Alerts in Multimode]	Y	Y
RWS-0705	Manage Targeting Queues [A)Nominate Target from Targeting Queue, B)Save/Modify/Delete Nominated Entity]	Y	Y
RWS-0706	Maintain Target Type(Equipment/Facility) Translation Tables	Y	Y

ACE TRAINING QUESTIONNAIRE

Purpose: This questionnaire is used to capture your views concerning your ACE Functional Identity (FI) Classroom Training. The data you provide will help decision makers evaluate how effective the Training program has been designed to effectively train soldiers to use the ACE. None of the data you give will be provided to your unit or higher level chain of command nor entered into your personal files. Your responses will be maintained under strict enforcement of Confidentiality Public Law.

Instructions: Read each item carefully. Enter your response in the space provided or circle the appropriate response. We would welcome any written comment you may provide in response to a particular question asked. Please use the reverse of the page (if necessary) for these entries and indicate item number for which you are giving written comment.

Rating Scheme: The rating criteria used in this questionnaire are defined below. Please ensure that you understand these rating criteria when answering questions with a rating scheme. Circle number which indicates your judgment--or N/A = 9 if item is not relevant for you.

- 1: Completely Agree:** There must be absolutely no doubt when using this response that the factor being evaluated cannot be any better--in condition, design or composition and is a desirable system feature.
- 2: Strongly Agree:** This response indicates that the factor being evaluated is very good and very helpful to the analyst/operator.
- 3: Generally Agree:** This response indicates the factor being evaluated is acceptable and helpful to the analyst/operator.
- 4: Generally Disagree:** This response indicates the factor being evaluated is unacceptable, but only minor improvements are required to make it acceptable. Written comment indicating examples of how change should be made would be appropriate when this rating is used.
- 5: Strongly Disagree:** This response indicates that the factor being evaluated is unacceptable and major improvements are required to make it acceptable. Written comment indicating examples of how change should be made would be appropriate when this rating is used.
- 6: Completely Disagree:** There must be absolutely no doubt when using this response that the factor being evaluated is unacceptable--condition, design or composition and must be completely changed to be acceptable. Written comment indicating examples of how change should be made would be appropriate when this rating is used.

PART I. GENERAL INFORMATION

1. Dates Training Received: (MM/DD/YY) _____
2. Course Name/FI Training: _____
3. Student Name/Rank: _____

PART II. COURSE MATERIAL

4. Information received during this training will:

- 1 = Enhance my ability to do my job
- 2 = Somewhat enhance my ability to do my job
- 3 = Be of no assistance in doing my job

5. Technical information presented during this training was:

- 1 = Incomprehensible
- 2 = Elementary, boring
- 3 = Comprehensible, easily understood

6. This training was:

- 1 = Too long
- 2 = Too short
- 3 = About right

7. Reference question 6: If any part of the classroom instruction was too long, what part(s) could be shortened and still meet your training needs?

8. Reference question 6: If any part of the classroom instruction was too short, what part(s) should be lengthened to meet your training needs?

9. Position manuals were available for reference for all parts of the instruction if I had difficulty executing a function.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=9

Indicate part(s) where manuals were not available. _____

10. Appropriate field manuals were available for reference for all parts of instruction to accomplish analytical tasks if needed.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=9

Indicate part(s) where manuals were not available. _____

11. Appropriate technical manuals were available for reference for all parts of instruction to accomplish operator level maintenance and or troubleshooting tasks when needed and/or required.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=9

Indicate part(s) where manuals were not available. _____

12. All manuals are easy to understand.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=9

Indicate those manuals which are not. _____

13. All manuals are organized so that information can be quickly referenced and the information found and used in a timely manner.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=9

Indicate those manuals which are not. _____

PART III. COURSE PRESENTATION

14. Majority of lessons taught were:

- 1 = Very well presented
- 2 = Adequately presented
- 3 = Poorly presented

Indicate those lessons which were poorly presented. _____

15. Instructor presentations were:

- 1 = Well organized and easy to follow
- 2 = Unorganized; difficult to follow
- 3 = Some areas (or critical tasks) need improvement (please list) _____

16. Instructor presentations were:

- 1 = Clear; easy to understand
- 2 = Unclear; difficult to understand
- 3 = Some areas (or critical tasks) required greater clarification (please list) _____

17. The instructor was:

- 1 = Well prepared
- 2 = Somewhat prepared [please list areas (or critical tasks) not prepared] _____

- 3 = Poorly prepared
- 4 = Not prepared

18. The instructor was:

1 = Able to answer questions or provide assistance as needed

2 = Partially able to answer questions or provide assistance as needed

3 = Unable to answer questions or provide assistance as needed for some part(s)

Indicate part(s) where questions could not be answered. _____

19. Practice (hands on training) needed to develop individual skills proficiency in each part of instruction was:

1 = Most sufficient

2 = Sufficient

3 = Partially sufficient

4 = Insufficient

20. Reference question 19: If hands-on training was insufficient to build operator proficiency, in what subject area(s) (or critical tasks) did this occur?

21. The instructor used available training time:

1 = Fully and effectively

2 = Fully and effectively on the average

3 = Excessive amount of time was lost

PART IV. VALUE OF TRAINING AIDS

22. During this training, training aids were:

1 = Used effectively

2 = Used ineffectively

3 = Not used at all, but needed

4 = Not used at all, not needed

5 = Some training aids need further work (please list one or two examples) _____

23. Training aids were used:

1 = Too often

2 = About right

3 = Too little

24. Training aids used were:

1 = Of good quality

2 = Of fair quality

3 = Of poor quality

Recommended changes (if any) _____

PART V. TOOLS AND EQUIPMENT

25. I experienced no software malfunctions which would cause me operational difficulties in the accomplishment of intelligence gathering, processing, analyzing, and dissemination tasks.

Completely Disagree 1 2 3 4 5 6 Completely Agree N/A=9

Indicate software malfunctions experienced. _____

26. I experienced no hardware malfunctions which would cause me operational difficulties in the accomplishment of intelligence gathering, processing, analyzing, and dissemination tasks.

Completely Disagree 1 2 3 4 5 6 Completely Agree N/A=9

Indicate hardware malfunctions experienced. _____

27. My workstation was of:

1 = Excellent design

2 = Good design

3 = Poor design

Please indicate recommendations for change. _____

PART VI. TRAINING FACILITIES/FACTORS

28. Classroom was:

1 = Adequate in size

2 = Inadequate in size (please indicate why) _____

29. Classroom was:

1 = Free of noise and other distractions

2 = Contained noise and other distractions (please indicate sources) _____

30. Classroom was:

1 = Adequately lighted

2 = Not adequately lighted

31. Classroom was:

1 = Adequately ventilated

2 = Inadequately ventilated

32. Unit requirements caused disruptions to my training:

- 1 = Often
- 2 = Frequently
- 3 = Sometimes
- 4 = Never

List types of disruptions. _____

33. Instructor to student ratios, particularly during practical exercises:

- 1 = Contributed to major learning difficulties
- 2 = Caused no learning difficulty
- 3 = Caused minor learning difficulty

Indicate why (if you know) there were learning difficulties. _____

34. Workstation shortages, particularly during hands-on training:

- 1 = Contributed to an inability to build individual skills proficiency
- 2 = Caused minor problems in building individual skills proficiency
- 3 = Did not interfere with building individual skills proficiency
- 4 = There was no workstation shortage

PART VII. PRACTICAL EXERCISES/PERFORMANCE EVALUATIONS

35. The majority of the practical exercises (PEs) in this training:

- 1 = Greatly assisted in building operator proficiency
- 2 = Moderately assisted in building operator proficiency
- 3 = Did not contribute to building operator proficiency

Indicate those which did not. _____

- 4 = There was no practical exercise(s) during this block of instruction

36. The majority of the practical exercises in this block on instruction:

- 1 = Made sense. I always knew what I was doing and why. I could always relate the PE to the accomplishment of individual tasks at my unit.
- 2 = Made little sense. I never knew what I was doing or why. Could not always relate the PE to the accomplishment of individual tasks at my unit.
- 3 = There was no practical exercise(s) during this block of instruction.

Indicate those which did not. _____

- 4 = Needed some explanation by instructor.

37. Performance tests evaluated (Check all which apply):

- 1 = What was taught and nothing more
- 2 = More than what was taught
- 3 = My knowledge of the system at this point of training
- 4 = My level of proficiency at this point of training
- 5 = There was no performance test(s) administered during this block of instruction

PART VIII. PERFORMANCE OF CRITICAL TASKS--Use TASK No. on "Training Assessment Debrief"

38. List those critical tasks taught during this training which you found difficult to learn and hard to perform:

Difficult to Learn

Hard to Perform

39. I believe the following critical task(s) requires less instruction time to train.

40. I believe the following critical task(s) requires more instruction time to train.

41. I believe the following critical task(s) will require continuous practice and training at unit level to prevent skill decay and/or proficiency loss.

PART IX. OPINION, REMARKS, RECOMMENDATIONS

42. Training received during this training was:

- 1 = Very good
- 2 = Good
- 3 = Fair
- 4 = Poor

43. I recommend the following additions to this training. Why?

44. I recommend the following deletions to this training. Why?

**Analysis and Control Element (ACE)
Initial Operational Test and Evaluation (IOTE)
Demographic Questionnaire**

Purpose: This questionnaire is used to capture information related to your military background, MOS experience, and your operational familiarity with current intelligence gathering systems.

PRIVACY ACT STATEMENT

Public Law 93-573, called the Privacy Act of 1974, requires that you be informed of the purpose and uses to be made of the information that is collected.

The Department of the Army may collect the information requested under authority of 10 United States Code 137.

Providing information in this questionnaire is voluntary. Failure to respond to any particular question will not result in any penalty for the respondent.

The information collected in this survey will be used to evaluate military intelligence systems and their utilization.

The information will be used for research and analysis only. The US Army Operational Evaluation Command has primary research, analysis, and evaluation responsibility.

Instructions: Read each item carefully. Enter your response in the space provided.

Last Name: _____ First Name: _____ MI: _____
(Please Print) (Please Print)

SSN: _____ Approval¹ _____
Signature

Date: _____ Operator Echelon: _____
MO DA YR (Bde, Div, etc.)

Functional Identity (ACE Function) _____

¹SSN is requested only to make it possible to obtain your ASVAB Subtest and Composite Scores from the Defense Manpower Data Center (DMDC) in Monterey, CA. ASVAB data and other personal data on file at DMDC will be used to indicate how comparable you and other soldiers participating in this test are to all soldiers who will be using ACE when it is fielded.

I. MILITARY INFORMATION:

1. Rank: _____
2. Primary MOS: _____
3. Secondary MOS: _____
4. Duty MOS/SSI: _____
5. Date Graduated from AIT/OBC: ____ / ____ (MM/YR)
6. Date Received PMOS/SSI: ____ / ____ (MM/YR)
7. How did you receive your PMOS/SSI (Please Circle Response):
1=AIT 2=OJT 3=Reclassification 4=Promotion 5=Other _____
8. Date Entered Active Duty: ____ / ____ (MM/YR)
9. Unit Assigned: _____
10. Date Assigned: ____ / ____ (MM/YR)
11. ETS/ESA: ____ / ____ (MM/YR)
12. Projected PCS Date: ____ / ____ (MM/YR)
13. Current Duty Position: _____ (outside the WFX)
14. Time in Current Duty Position: ____ (MM)
15. Time Using Army C2 Digital Systems: ____ (MM)
16. Civilian Education (Please Circle Response):
 - a. Current
 - 1= No high school degree
 - 2= High school diploma
 - 3= GED
 - 4= Some college (1-2 years)
 - 5= Technical school
 - 6= Associate Degree
 - 7= Three or more years of college (no degree)
 - 8= College degree
 - 9= Graduate degree
 - b. At Last Service Entry
 - 1= No high school degree
 - 2= High school diploma
 - 3= GED
 - 4= Some college (1-2 years)
 - 5= Technical school
 - 6= Associate Degree
 - 7= Three or more years of college (no degree)
 - 8= College degree
 - 9= Graduate degree
17. Gender 1= Male 2= Female
18. Age ____ yrs ____ months
19. Height ____ inches
20. Weight ____ lbs
21. Eyeware (during evaluation session): None ____ Glasses ____ Contacts ____
22. Handedness: Right ____ Left ____ Ambidextrous ____

23. Racial/Ethnic Background

- 1= American Indian/Alaskan Native
- 2= Asian/Pacific Islander
- 3= Black, not Hispanic origin
- 4= Hispanic
- 5= White, not Hispanic origin

24. Current Injuries (list) _____

II. INTELLIGENCE SYSTEMS EXPERIENCE: The following questions relate to your automated intelligence processing systems experience. If you have received training on any of the systems cited please identify the nature of that experience in the area specified.

1. Type System: EPDS 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

2. Type System: TCAC 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

3. Type System: THMT 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

4. Type System: MICROFIX 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

5. Type System: GUARDRAIL 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

6. Type System: JSTARS 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

7. Type System: QUICKFIX 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

8. Type System: TEAMMATE 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

9. Type System: TACJAM 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

10. Type System: UAV 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

11. Type System: TRAILBLAZER 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Experience on System Years/Months (YR/MM) ____ / ____

12. Type System: ASAS 1 = Yes 2 = No

Type Training: Year Trained: _____

1 = AIT 2 = NETT 3 = OJT 4 = Other: _____ (Specify)

Trained on ASAS Subsystems: 1) SS 2) AS 3) RWS 4) ASAS Light 5) CCS
6) ACT-E 7) CI/HUMINT 8) Trusted Work Stations
9) MASINT 10) OSINT

Experience on System Years/Months (YR/MM) ____ / ____

III. COMPUTER EXPERIENCE:

13. How many months experience have you had with a Personal Computer/MAC or Laptop/Notebook computer? _____

14. Confidence in:	Confident	Very Confident	Somewhat Confident	Not Confident
Using Computers in General	_____	_____	_____	_____
Using Personally Owned Computers	_____	_____	_____	_____
Using Army C2 Digital Systems	_____	_____	_____	_____
Performing Multiple Tasks at Same Time	_____	_____	_____	_____

15. Average Number of Hours Per Week Spent Using a Computer (On/Off Duty) _____(hours)

IV. EXPERIENCE WITH SPECIFIC INTELLIGENCE FUNCTIONS:

16. Estimate your knowledge in the use of JINTACCS/USMTF message formats.

0 = 0% 1 = 25% 2 = 50% 3 = 75% 4 = 100%

17. Please record the number of years/months you have actually performed the following function at the highest command level. If sections under the topical headings are not applicable to you, circle "2=No" adjacent to the sub-topic area.

COLLECTION MANAGEMENT:		If Function is Yes, indicate:					Experience YY MM		
Requirements Management	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Requirements Development	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Collection Evaluation Analysis	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
MISSION MANAGEMENT:									
Resource Selection	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Non-Organic Support Requests	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
ASSET MANAGEMENT:									
Organic Resource Task	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Status Monitoring	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	Resource
INTELLIGENCE MESSAGE PROCESSING:									
Message Processing-IN	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Message Processing-OUT	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Message Preparation-OUT	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Processing	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Battle Damage Assessment									
Input	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
All Source Database	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Order of Battle	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
ALL SOURCE PROCESSING:									
MTI Processing	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
FTI Processing	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
HUMINT Processing	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
New Nodes Processing	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
Node Change Status									
SITUATION DEVELOPMENT:									
Dynamic Situation Monitoring	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____
IPB	1=Yes 2=No	Command Level:	1=Bn	2=Bde	3=Div	4=Corp	5=EAC	_____	_____

TARGET DEVELOPMENT:

Target Nominations	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
Battle Damage Assessment	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____

ELECTRONIC WARFARE SUPPORT:

EW Planning	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
Evaluation of Current Operations	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
Evaluation of MIJI Reports	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____

OPSEC SUPPORT:

Risk Assessment	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
Counter Actions Planning	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____

REPORT EVALUATING

Effectiveness	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
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SIGINT ANALYSIS:

COMINT/Traffic Analysis	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
CRYPTO Analysis	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
Signals Analysis	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
COMINT/ELINT Integration	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
ELINT/Signals Analysis	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____

ASSET MANAGEMENT

Organic Resource Tasking	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____
Resource Status Monitoring	1=Yes	2=No	Command Level: 1=Bn 2=Bde 3=Div 4=Corp 5=EAC	_____	_____

2.3.1.2.4 MANPRINT Debrief (table 6). The form—referenced in row 4, column 1 of table 4—presented as an example represents an iteration of the form used for collective tasks in a later LUTE for a different ASAS subsystem. Generally, MANPRINT Debrief forms are used for Individual—keystroke-oriented critical tasks, as well as Collective critical tasks. Collective tasks generally involve sequences of Individual tasks and are more easily identified as Mission-oriented MOS-based tasks. This particular form (see page 37) provides more detail about problems that may have existed in the training process that could be attributed to the disparity in the way tasks are performed with and without computer augmentation. Originally, it was planned to be administered at the end of each test day in the Pilot and Record test for analysts and data collectors. The data collectors received the same training as the analysts and they stood by the analysts during the test and watched what they were doing. The MANPRINT Debrief was for them to document the individual critical tasks that were performed and to indicate those tasks that were problematic. While this form was designed to be used stand-alone with appropriate comments written on the form, it was used more as a tabulation sheet for soldiers' referral so that they knew those individual and collective tasks on which a more complete MANPRINT Evaluation was required—on the next form discussed.

2.3.1.2.5 MANPRINT Evaluation. The form—referenced in row 5, column 1 on the first page of table 4—is used in conjunction with or after the MANPRINT Debrief. The MANPRINT Debriefs are forms that contains key items that can apply to each of the critical tasks and asks the respondents to provide detailed feedback about problems in their performance (or what they observed). They use the completed form (shown in table 6) as a reference for determining the number of MANPRINT evaluation forms they are expected to complete (see page 44). Those forms were used to provide detailed ratings and comments on problematic tasks.

In appendix G, a standalone Workload Questionnaire used during the MCS IOTE is presented (18).

2.3.1.2.6 Human Factors Engineering General Software Functioning. The particular version of this form presented here—referenced in row 1, column 1 of the second page of table 4—was modified for use in the block 2 IOTE testing for ASAS (see page 48). It was adapted from a similar instrument used in earlier ASAS sub-system LUTE testing. Items included on this form addressed the adequacy of different characteristics of the: (1) video display; (2) keyboard; and (3) mechanics of accessing software. This form was generally completed near the end of the test so that soldiers would have had maximal opportunity to make judgments about the video, keyboard and accessing software.

MANPRINT DEBRIEF FOR
ASAS-LIGHT BLOCK 2 LUTE
(COLLECTIVE TASKS)

BIO/BACKGROUND

Name _____ PIN no. _____ DATE _____
Please Print Mo/Da/Yr

Position: ASAS Light Analyst

Echelon (please circle):

BTN DIV BDE CORP EAC

INSTRUCTIONS FOR COLLECTIVE CRITICAL TASKS

1. Each listed TASK has sub-tasks, many of which are completed when the TASK is performed (columns A and B).
2. For each TASK (and sub-TASK), circle Y in the PERFORMED column (column C), if performed during collective training.
3. Circle Y in the PROBLEMS column (column D) if you experienced one or more problems in performing this TASK (or sub-TASK).
4. In column E (1), circle Y if your training indicated which individual tasks you needed to use to perform the TASK (or sub-TASK).
5. In column E (2), indicate the ADEQUACY of training you received in HOW TO USE those INDIVIDUAL TASKS to complete each Collective Task (and sub-Task) using the following scale:

1 = More than adequate
2 = Adequate
3 = Not quite adequate
4 = Barely adequate
5 = Not adequate

Table 6. MANPRINT debrief for collective tasks.

A Task No.	B Task Name (Collective)	C Performed	D Problems	E Training Identified Individual Tasks Needed to Perform	
				Which Tasks (1)	How to Use Tasks (Adequacy) (2)
2003	Conduct Intelligence Preparation of the Battlefield (IPB) (MNVR BN)	Y	Y	Y	Y
-A	Establish coordination with other staff elements IAW unit tactical SOP	Y	Y	Y	Y
-B	Define the battlefield area	Y	Y	Y	Y
-C	Analyze/describe terrain/weather effects on friendly and enemy COAs	Y	Y	Y	Y
-D	Prepare a modified combined obstacle overlay	Y	Y	Y	Y
-E	Create/update threat doctrine or patterns of operation to doctrinal templates	Y	Y	Y	Y
-F	Identify threats likely objectives/end state one and two levels of threat command below your own	Y	Y	Y	Y
-G	Assist in production of decision support template through wargaming and other developed IPB products	Y	Y	Y	Y
-H	Confirm/deny/update existing estimate of enemy's COA	Y	Y	Y	Y
2004	Produce Intelligence Products (MNVR BN)	Y	Y	Y	Y
-A	Record incoming information and intelligence	Y	Y	Y	Y
-B	Provide timely intelligence support to targeting	Y	Y	Y	Y
-C	Dynamically establish/terminate sensor-to-shooter links	Y	Y	Y	Y
-D	Produce the intelligence annex to the battalion OPORD	Y	Y	Y	Y
-E	Process/disseminate the Intelligence Annex	Y	Y	Y	Y
-F	Produce an intelligence summary addressing commander's PIR and IR	Y	Y	Y	Y

Table 6. MANPRINT debrief for collective tasks (continued).

A Task No.	B Task Name (Collective)	C Performed	D Problems	E Training Identified Individual Tasks Needed to Perform	
				Which Tasks (1)	How to Use Tasks (Adequacy) (2)
2005	Disseminate Combat Information and Intelligence (MNVR BN)	Y	Y	Y	Y
-A	Determine combat/intelligence information that requires dissemination	Y	Y	Y	Y
-B	Disseminate combat information to addresses listed in tactical SOP	Y	Y	Y	Y
-C	Disseminate via frequency modulated /MSE, tactical satellite, tactical internet...	Y	Y	Y	Y
-D	Confirm receipt of information/intelligence passed	Y	Y	Y	Y
2009	Intelligence Operations (MNVR BN)	Y	Y	Y	Y
-A	Monitor current/projected enemy situation and COA	Y	Y	Y	Y
-B	Recommend changes to PIR	Y	Y	Y	Y
-C	Recommend changes to IR	Y	Y	Y	Y
-D	Supervise intelligence acquisition tasks by battalion assets	Y	Y	Y	Y
-E	Monitor status of intelligence information requests	Y	Y	Y	Y
-F	Initiate new intelligence information requests	Y	Y	Y	Y
-G	Supervise transfer of captured personnel/ documents/ material IAW brigades tactical SOP	Y	Y	Y	Y
-H	Coordinate intelligence effort between main and tactical command post	Y	Y	Y	Y
-I	Supervise release/ dissemination of intelligence products	Y	Y	Y	Y
2010	Maintain the Current Enemy Situation (MNVR BN)	Y	Y	Y	Y
-A	Merge significant aspects of AO and current enemy situation	Y	Y	Y	Y
-B	Use PIR/IR in analysis of current enemy situation	Y	Y	Y	Y

Table 6. MANPRINT debrief for collective tasks (continued).

A Task No.	B Task Name (Collective)	C Performed	D Problems	E Training Identified Individual Tasks Needed to Perform	
				Which Tasks (1)	How to Use Tasks (Adequacy) (2)
-C	Analyze/compare current enemy dispositions/compositions with project action course	Y	Y	Y	Y
-D	Confirm/deny courses of action/update enemy situation and track status of LTIOV for each PIR	Y	Y	Y	Y
-E	Maintain current enemy situation (capabilities /vulnerabilities) with prioritized COA and probable future intent	Y	Y	Y	Y
-F	Maintain situation map to show enemy situation and locations and indicators of future events	Y	Y	Y	Y
2012	Supervise Intelligence Operations (MNVR BN)	Y	Y	Y	Y
-A	Serve as focus for battalions intelligence support	Y	Y	Y	Y
-B	Conduct Briefings of assigned elements on current situation and new taskings	Y	Y	Y	Y
-C	Review taskings for clarity and completeness	Y	Y	Y	Y
-D	Prioritize intelligence requirements	Y	Y	Y	Y
-E	Supervise efforts in support of IPB process	Y	Y	Y	Y
-F	Submit intelligence products ready for dissemination	Y	Y	Y	Y
2013	Process Specific Information Requirements (SIR) Data (MNVR BN)	Y	Y	Y	Y
-A	Identify enemy characteristics that meet specific information requirements	Y	Y	Y	Y
-B	Integrate specific information requirements into reconnaissance, intelligence, surveillance and target acquisition plan	Y	Y	Y	Y
-C	Identify information/intelligence gaps	Y	Y	Y	Y
-D	When will enemy reconnaissance elements move	Y	Y	Y	Y

Table 6. MANPRINT debrief for collective tasks (continued).

A Task No.	B Task Name (Collective)	Performed	Problems	(E) Training Identified Individual Tasks Needed to Perform	
				Which Tasks (1)	How to Use Tasks (Adequacy) (2)
-E	Indicate specifics on enemy artillery batteries	Y	Y	Y	Y
-F	Forward SIR/PIR/JR to brigade S2	Y	Y	Y	Y
-G	Determine intelligence reliability source/agency	Y	Y	Y	Y
-H	Determine intelligence credibility	Y	Y	Y	Y
-I	Compare incoming data with intelligence estimate	Y	Y	Y	Y
-J	Compare incoming data with intelligence products developed during IPB process (intel indicators, intel workbook, PIRs, IRs, SIRs, Situation map)	Y	Y	Y	Y
-K	Determining validity of incoming data based on preceding standards	Y	Y	Y	Y
-L	Analyze enemy information/intelligence (re: strengths/vulnerabilities, weather terrain...)	Y	Y	Y	Y
-M	Provide estimate of enemy's ability/likeliness to use NBC	Y	Y	Y	Y
-N	Acquire information to conduct/develop command information, operations security, and electronic warfare analysis and a tactical deception plan	Y	Y	Y	Y
-O	Estimate potential effectiveness of enemy smoke and NBC weapons on friendly operations	Y	Y	Y	Y
2015	Provide Intelligence Support to Targeting (MNVR BN)	Y	Y	Y	Y
	"Decide" Function of Targeting				
-A	Develop high value/payoff target lists	Y	Y	Y	Y
-B	Develop target selection standards and management matrix	Y	Y	Y	Y
-C	Determine whether available assets and time constraints will make a target attackable	Y	Y	Y	Y

Table 6. MANPRINT debrief for collective tasks (continued).

A Task No.	B Task Name (Collective)	Performed	Problems	(E) Training Identified Individual Tasks Needed to Perform	
				Which Tasks (1)	How to Use Tasks (Adequacy) (2)
-D	Develop attack guidance matrix from decision support template and time phase lines	Y	Y	Y	Y
	“Detect” Function of Targeting				
-E	Provide FSO all targetable data	Y	Y	Y	Y
-F	Refine reconnaissance, intelligence, surveillance and target acquisition plan	Y	Y	Y	Y
-G	Inform FSO and brigade staff of tactical changes by enemy	Y	Y	Y	Y
-H	Notify FSO of changes in common relevant picture or situation map that effect targeting plan	Y	Y	Y	Y
-I	Update decision support template to support attack guidance matrix	Y	Y	Y	Y
	“Deliver” Function of Targeting				
-J	Provide targeting team with location and targeting data	Y	Y	Y	Y
	“Assess” Function of Targeting				
-K	Determine which targets require BDA	Y	Y	Y	Y
-L	Task assets to collect BDA	Y	Y	Y	Y
-M	Analyze and horizontally disseminate BDA results per battalion SOP	Y	Y	Y	Y
-N	Recommend battle plan change based on BDA	Y	Y	Y	Y
2020	Produce a Reconnaissance, Intelligence, Surveillance and Target Acquisition (RISTA) Plan (MNVR BN)	Y	Y	Y	Y
-A	Associate RISTA objectives, PIRs, situation and event templates to indicate expected enemy COA	Y	Y	Y	Y

Table 6. MANPRINT debrief for collective tasks (continued).

A Task No.	B Task Name (Collective)	Performed	Problems	(E) Training Identified Individual Tasks Needed to Perform	
				Which Tasks (1)	How to Use Tasks (Adequacy) (2)
-B	Identify available collection assets	Y	Y	Y	Y
-C	Prepare intelligence synchronization matrix to answer PIRs, targeting requirements and RISTA objectives	Y	Y	Y	Y
-E	Ensure mix of assets is used	Y	Y	Y	Y
-F	Create RISTA overlay with RISTA matrix to address “who”, “what”, “where”, “when” and “how”	Y	Y	Y	Y
-G	Use RISTA plan to develop SIRs for each PIR	Y	Y	Y	Y
2032	Conduct Intelligence Functions for Deployment	Y	Y	Y	Y
-A	Analyze AO	Y	Y	Y	Y
-B	Collect intelligence products (imagery, terrain, weather)	Y	Y	Y	Y
-C	Conduct IPB	Y	Y	Y	Y
-D	Identify intelligence database gaps	Y	Y	Y	Y
-E	Prepare intelligence estimate/develop threat models	Y	Y	Y	Y
-F	Recommend PIRs and IRs to support operation concept	Y	Y	Y	Y

¹Each task no. is actually preceded by “34-1-”and followed by “34-00MA”.

MANPRINT EVALUATION
ANALYSIS AND CONTROL ELEMENT (ACE)
INITIAL OPERATIONAL TEST AND EVALUATION (IOTE)

BIO/BACKGROUND/POSITION

Name _____ PIN no. _____ Date _____
(Last 4 SSN) (Mo/Da/Yr)

Position(circle or indicate): CCS SMART Multifunction Work Station RIS/ELINT SS AS
SIT/IPB DBM SIGINT Trusted Suite ISR CI/HUMINT OSINT

Test Phase: End of Test

Problem Description

1. Task Performing (use task no.):

2. Most probable problem causes (circle up to three most important):

a. Equipment malfunction (appears unrelated to any soldier action)

b. Training

(1) Poor or inadequate classroom training on task (2) Lack of sustainment/collective training on task

c. Manpower (not enough soldiers to do job involving this task)

(1) Need more analysts to perform this task (2) Need more time to complete the task

(3) Need more responsive maintenance support (4) Need more/better supervision

d. Personnel (task is outside "normal" duties for my MOS or skill level)

e. Health Hazard (task jeopardized my or another crew member's safety)

f. System Safety (task performed created a safety problem related to ASAS equipment)

g. Human Factors

(1) Problem working with ACE Functional Identity equipment/hardware--difficult or complicated to work with or access when this task was performed

(2) Problem with ACE Functional Identity software when this task was performed

(3) Problem with ACE Functional Identity procedures

3. Problem Description: _____

4. Problem reported in (1) Individual Training (Survey) or (2) Collective Training (Survey/Interview)

5. Frequency this task was performed since formal class (Individual Training) was completed _____ (use number from following scale)

1 = at least once daily
2 = once or twice a week

3 = at least once in the three weeks
4 = not at all

6. TM (D.O.G.) error contributed to this problem: YES NO (circle)
If YES, indicate: (a) TM no./D.O.G. (b) page/para or Figure (c) error description

a) TM/D.O.G. _____

b) _____

c) _____

7. Problem Frequency/Severity (when task is being performed):

Frequency (circle letter indicating judgment)

a. Frequent - continuously experienced

b. Probable - will occur frequently

c. Occasional - will occur several times

d. Remote - unlikely, but possible

e. Improbable - very unlikely to occur

Severity (circle Roman numeral indicating judgment)

I Catastrophic - death or system's loss

II Critical - severe injury or major system damage

III Marginal - minor injury or system damage

IV Negligible - less than minor injury or system damage

8. Job Stress (when task is being performed):	
<p>a) TEMPORAL STRESS - Pace at which task must be performed is hurried or rushed</p> <p><u>Circle No.</u></p> <p>1 = Not hurried or rushed</p> <p>2 = A little hurried or rushed</p> <p>3 = Occasionally hurried or rushed</p> <p>4 = Frequently hurried or rushed</p> <p>5 = Very frequently hurried or rushed</p>	<p>b) MENTAL STRESS - Task completion requires conscious mental effort (concentration)</p> <p><u>Circle No.</u></p> <p>1 = None needed</p> <p>2 = Little needed</p> <p>3 = Moderate amount needed</p> <p>4 = Extensive amount needed</p> <p>If 3 or 4, indicate why:</p> <p>_____</p> <p>_____</p>
<p>c) PHYSICAL STRESS - Task completion requires physical effort.</p> <p><u>Circle No.</u></p> <p>1 = No demand</p> <p>2 = Little demand</p> <p>3 = Moderate demand</p> <p>4 = Heavy demand</p> <p>5 = Very heavy demand</p> <p>If 4 or 5, indicate why:</p> <p>_____</p> <p>_____</p>	<p>d) PSYCHOLOGICAL STRESS - Task completion causes confusion, frustration, or anxiety.</p> <p><u>Circle No.</u></p> <p>1 = None</p> <p>2 = Little</p> <p>3 = Moderate</p> <p>4 = High</p> <p>5 = Intense</p> <p>If 4 or 5, indicate why:</p> <p>_____ □ _____</p> <p>_____</p>
8. Job Stress (when task is being performed): (continued)	

<p>e) TASK OVERLAP - Task must be performed at or nearly at same time as other tasks or with interruptions.</p> <p><u>Circle No.</u></p> <p>1 = No overlap (or interruptions)</p> <p>2 = Little overlap (or interruptions)</p> <p>3 = Occasional overlap (or interruptions)</p> <p>4 = Frequent overlap (or interruptions)</p> <p>5 = Very frequent overlap (or interruptions)</p> <p>If 4 or 5, which other tasks (use no. from Critical Task List)</p> <p>Task List _____ _____ _____</p> <p>Task No. _____ _____ _____</p>	<p>f) EFFORT STRESS - Task completion to meet mission needs requires continuous effort.</p> <p><u>Circle No.</u></p> <p>1 = No</p> <p>2 = Little</p> <p>3 = Moderate</p> <p>4 = Extensive</p> <p>If 3 or 4, indicate why: _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
---	---

9. Mission successfully performed (even with problem): 100% 75% 50% 25% 0%

10. Fix (procedure/task modification needed to complete mission): YES NO (circle)

11. Recommended fix (if any) (continue on back side, if necessary): _____

**HUMAN FACTORS ENGINEERING (GENERAL PC-SOFTWARE FUNCTIONING) QUESTIONNAIRE
FOR THE ANALYSIS AND CONTROL ELEMENT (ACE)
INITIAL OPERATIONAL TEST AND EVALUATION (IOTE)**

Purpose: This questionnaire is used to capture your views concerning the Human Factors Engineering aspects of ACE. The data you provide will help decision makers evaluate how effective the ACE has been designed to assist you in the performance of your intelligence gathering, processing and analysis tasks.

PRIVACY ACT STATEMENT

Public Law 03-573, called the Privacy Act of 1974, requires that you be informed of the purpose and uses to be made of the information that is collected.

The Department of the Army may collect the information requested under authority of 10 United States Code 137.

Providing information in this questionnaire is voluntary. Failure to respond to any particular question will not result in any penalty for the respondent.

The information collected in this survey will be used to evaluate military intelligence systems and their utilization.

The information will be used for research and analysis only. The US Army Test and Evaluation Command (ATEC) has primary research, analysis, and evaluation responsibility.

Instructions:

1. On Page 2:

- a) Check the Functional Identities on which you are serving as an Operator
- b) Indicate your Echelon (e.g., Btn, Bde, Div) of operation (it is understood that some soldiers are operating in more than one functionality)
- c) Indicate name of your workstation--keyboard and monitor

- 2. On Page 3 please read the descriptions of the seven possible responses. For each of the questions beginning on Page 4, read each question carefully and circle the response that appropriately reflects your opinion. Although not required, we would welcome any written comment you may wish to provide in response to a particular question. Please use the reverse of the page for these entries and key your responses to the question number.

BIO/BACKGROUND/POSITION

Name _____ PIN No. _____ Date _____
(Please Print) (Last 4 SSN) MM/DD/YY

a) Functional Identities (ACE Components) on which you have been serving as a Test Participant Operator (please check):

- ☐ ISS
- ☐ CCS
- ☐ Shared SS
 - ☐ COMINT
 - ☐ IMINT
 - ☐ RIS/ELINT
 - ☐ SIGINT/MASINT
 - ☐ CI/HUMINT
 - ☐ OSINT
- ☐ AS
 - ☐ SIT/IPB/DB
 - ☐ TGTDEV
 - ☐ CM/ISR
 - ☐ Asset Mgmnt
 - ☐ Trusted Suite (TWS)

b) Echelon (Btn, Bde, Div) _____

c) Workstation _____ Keyboard _____ Monitor _____

Rating Scheme: The rating criteria used for the following questions are defined below. Please ensure that you understand these rating criteria when answering questions with a rating scheme.

1: Completely Agree: There must be absolutely no doubt when using this response that the item being evaluated cannot be any better designed, written, or has great value and is a desirable system feature or function.

2: Strongly Agree: This response indicates that the item being evaluated is very good and very helpful to the analyst/operator.

3: Generally Agree: This response indicates the item being evaluated is acceptable and helpful to the analyst/operator.

4: Generally Disagree: This response indicates the item being evaluated is unacceptable, but only minor improvements are required before it is acceptable. Written comment indicating examples of how change should be made would be appropriate when this rating is used. Please write comments on back of form and reference item no.

5: Strongly Disagree: This response indicates that the item being evaluated is unacceptable and major improvements are required to make it acceptable. Written comment indicating examples of how change should be made would be appropriate when this rating is used. Please write comments on back of form and reference item no.

6: Completely Disagree: There must be absolutely no doubt when using this response that the item being evaluated is of unacceptable design, composition, or value and must be completely redesigned, rewritten, or modified to be acceptable. Written comment indicating examples of how change should be made would be appropriate when this rating is used. Please write comments on back of form and reference item no.

0: Unknown: This response indicates that you do not have sufficient knowledge to answer the question or you have not experienced the action or item in question.

HUMAN FACTORS ENGINEERING QUESTIONNAIRE

1 = Completely Agree	3 = Generally Agree	5 = Strongly Disagree	0 = No knowledge or Experience
2 = Strongly Agree	4 = Generally Disagree	6 = Completely Disagree	
Environmental/Physical Concerns			
(1) The brightness level on the computer screens can be adjusted to a comfortable level.	1 2 3 4 5 6 0		
(2) Eye strain at the end of the shift does not seem to be a problem.	1 2 3 4 5 6 0		
(a) Video displays are free of flicker.	1 2 3 4 5 6 0		
(b) Video displays allow good letter discrimination.	1 2 3 4 5 6 0		
(c) Video displays viewing distance is acceptable.	1 2 3 4 5 6 0		
(d) Video displays angle of view is acceptable.	1 2 3 4 5 6 0		
(e) Location of video display is acceptable.	1 2 3 4 5 6 0		
(f) Adjustability of video displays is acceptable.	1 2 3 4 5 6 0		
(3) The workstation requires a "glare screen".	1 2 3 4 5 6 0		
(4) Operating the system components does not cause any physical discomfort (such as, back strain and arm or wrist strain).	1 2 3 4 5 6 0		
(a) Size of keyboard and controls is acceptable for effective use.	1 2 3 4 5 6 0		
(b) Shape of keyboard and controls is acceptable for effective use.	1 2 3 4 5 6 0		
(c) Spacing between controls on keyboard is acceptable for effective use.	1 2 3 4 5 6 0		
(d) Resistance (too easy to turn or push or too hard to turn or push) is acceptable for effective use.	1 2 3 4 5 6 0		
(e) Keyboard and controls are correctly labeled.	1 2 3 4 5 6 0		
(f) Keyboard and controls are the correct size for easy visibility.	1 2 3 4 5 6 0		
(g) Keyboard and controls are easy to understand.	1 2 3 4 5 6 0		
(h) Keyboard and controls do not have any unrelated or confusing markings.	1 2 3 4 5 6 0		
(i) Keyboard and controls are easy to see and are clearly visible.	1 2 3 4 5 6 0		
(j) Keyboard and controls are at the right angle of view.	1 2 3 4 5 6 0		
(k) Keyboard and controls are easily identifiable.	1 2 3 4 5 6 0		
(l) Keyboard and critical controls are within easy reach.	1 2 3 4 5 6 0		
(m) Keyboard and non-critical controls is acceptable.	1 2 3 4 5 6 0		
(n) Keyboard and non-critical controls are within easy reach.	1 2 3 4 5 6 0		
(o) Keyboard and controls are functionally grouped together.	1 2 3 4 5 6 0		
(p) Keyboard and control types are correct for the function they perform.	1 2 3 4 5 6 0		
(q) Keyboard and controls aural controls and warnings are easy to hear.	1 2 3 4 5 6 0		
(5) Dust covers are required on key components of the system (keyboard, workstation).	1 2 3 4 5 6 0		
Software			
(6) It is easy to delete unneeded data from the display screen while performing procedures or tasks.	1 2 3 4 5 6 0		
(7) It is easy to access menus.	1 2 3 4 5 6 0		
(8) The unfamiliar terms or commands are defined on the HELP screens.	1 2 3 4 5 6 0		
(9) Help prompts are always available in a display or are provided in response to a HELP request to assist in accomplishing the task.	1 2 3 4 5 6 0		

1 = Completely Agree 2 = Strongly Agree	3 = Generally Agree 4 = Generally Disagree	5 = Strongly Disagree 6 = Completely Disagree	0 = No knowledge or Experience
(10) The number and sequence of steps required to accomplish a task are logical and follow an orderly path.	1 2 3 4 5 6 0		
(11) All keystrokes/actions performed from one menu to the next are accomplished using the same series of keys/commands.	1 2 3 4 5 6 0		
(12) All prompts or messages appear in the same position and are in the same format.	1 2 3 4 5 6 0		
(13) At the completion of a task, the computer provides a prompt or message that shows the actions are completed.	1 2 3 4 5 6 0		
(14) While actions are being processed, the computer displays an "ICON" showing that the transaction is in process.	1 2 3 4 5 6 0		
(15) Response to menu selections, keypad operations, and graphic operations are immediate.	1 2 3 4 5 6 0		
(16) The cursor location is easy to find.	1 2 3 4 5 6 0		
(17a) The cursor can be moved easily and accurately to any location on the screen (using the <u>built-in</u> mouse pad).	1 2 3 4 5 6 0		
(17b) The cursor can be moved easily and accurately to any location on the screen (using the <u>external</u> mouse).	1 2 3 4 5 6 0		
(18) It is easy return to previous steps in an operation to correct an error or to make other changes.	1 2 3 4 5 6 0		
(19) It is easy to exit from a current operation or function.	1 2 3 4 5 6 0		
(20) It is easy to cancel changes and restore the previous display.	1 2 3 4 5 6 0		
(21) Mandatory and optional data fields are easily distinguished from each other.	1 2 3 4 5 6 0		
(22) When an entry in an optional field makes other normally optional fields mandatory, the computer provides sufficient prompts to alert the operator.	1 2 3 4 5 6 0		
(23) When mandatory data entries are omitted, a "warning message" alerts the operator to provide the required information.	1 2 3 4 5 6 0		
(24) Error messages are easy to understand.	1 2 3 4 5 6 0		
(25) Prompts are always provided prior to overwriting or exiting the message/file to avoid loss of data.	1 2 3 4 5 6 0		
(26) An UNDO command is available to reverse actions.	1 2 3 4 5 6 0		
(27) Menus can be arranged so they do not interfere with the accomplishment of tasks.	1 2 3 4 5 6 0		
(28) Frequently accessed menus are consistent in format and functionality from one to another.	1 2 3 4 5 6 0		
(29) It is easy to correct message errors character by character, line by line, and field by field.	1 2 3 4 5 6 0		

1 = Completely Agree 2 = Strongly Agree	3 = Generally Agree 4 = Generally Disagree	5 = Strongly Disagree 6 = Completely Disagree	0 = No knowledge or Experience
(30) Data fields are grouped and ordered logically way which made message building easy.	1 2 3 4 5 6 0		
(31) All data field labels are easily understood.	1 2 3 4 5 6 0		
(32) All data field instructions are easily understood.	1 2 3 4 5 6 0		
(33) It was easy to return to the main menu or base-level functions.	1 2 3 4 5 6 0		
(34) Menu options defined the function to be performed.	1 2 3 4 5 6 0		
(35) The menu structure and design permits immediate access to critical or frequently selected options.	1 2 3 4 5 6 0		
(36) The current position within the menu structure was always known.	1 2 3 4 5 6 0		
(37) Menu options use familiar terminology and each item is distinct from the other.	1 2 3 4 5 6 0		

2.3.1.2.7 Human Factors Engineering (Function-Specific) Questionnaire (table 11). This instrument—referenced in row 2, column 1 on the second page of table 4—was designed with the assistance of New Systems Training Integration Office (NSTIO) staff from Fort Huachuca and is designed to address function-specific software problems. The specific form presented here (see page 55) was used to support the Block 2 IOTE testing for ASAS. Development of this instrument utilized the Enabling and Terminal Learning Objectives found in the Lesson Plans used to train soldiers in their specific functionalities.

Appendix H provides a rather comprehensive Human Factors Engineering (Function-Specific) Questionnaire/Interview instrument used during the Block 2 ASAS IOTE in March 2005. This instrument asks questions for each of the participating Analysis and Control Element (ACE) Functional Identities and judgments about potential MANPRINT problems from both an Equipment and Function perspective. Soldiers were asked to indicate whether problems existed and to provide ratings about how well they agreed with the specific potential problems that may have existed. Ratings are sometimes helpful as descriptive statistics to tease out the importance of the reported problems; however, because the number of soldiers participating in each system function (Functional Identity) is generally very small, those ratings rarely are amenable to any inferential statistical analyses. While soldiers were asked to explain problems by keying their written response to specific questions, they frequently did not. In spite of very strong repeated urging of testing management to permit follow-up interviews with each soldier to clarify unanswered questions (or questions whose answers were ambiguous), this opportunity was denied. With review of ratings and responses of each participant to each form, interviews can be conducted to clarify responses only to items evidencing ambiguities needing fuller explanation.

**HUMAN FACTORS ENGINEERING (FUNCTION-SPECIFIC) QUESTIONNAIRE
FOR THE SINGLE SOURCE WORK STATIONS
BLOCK 2--INITIAL OPERATIONAL TEST AND EVALUATION (IOTE)²**

Purpose: This questionnaire is designed to capture data about the ability of the soldier to use the Single Source (SS) Work Station to accomplish the tasks of COMINT, IMINT HUMINT, and OSINT processing and dissemination. The data you provide will help decision makers evaluate (and correct, if necessary) how effectively the Single Source Work Stations and associated software have been designed to assist and enhance production and dissemination of intelligence products. None of your individual data will be provided to your chain of command nor entered into your personnel files. Your responses will be maintained under strict enforcement of Confidentiality Public Law.

Instructions: Read each item carefully and circle the appropriate numbered response. The response must reflect your perception of how well the Single Source Work Stations have assisted and enhanced your ability to perform COMINT, IMINT HUMINT, and OSINT processing and dissemination. The questionnaire is broad in scope; therefore, some questions may not pertain to the specific functionality you are performing. In those cases, circle “N/A = 0”. If you Disagree with any statement (ratings 4, 5, or 6), an explanation “why” is required. Please write your response on the back of this form and indicate for which question you are making comment. Items whose number is indented are sub-functions or tasks required to perform the function whose number is not indented.

<u>BIO/BACKGROUND/POSITION</u>		
Name _____ (Please Print)	PIN No. _____ (Last 4 SSN)	Date _____ MM/DD/YY
Equipment/System (circle or indicate):		
CI/HUMINT Work Station		
OSINT Work Station		
IMINT Work Station		
COMINT Work Station		
Test Phase: Evaluation Window 2--Mid Test		

²Functions, sub-functions and tasks presented in this survey have been provided through review of the Enabling and Terminal Learning Objectives found in the Lesson Plans used to train soldiers of the ACE Functionalities. They have been provided by the New Systems Training and Integration Office (NSTIO), Fort Huachuca, AZ.

The rating scheme is as follows:

1: Completely Agree: There must be absolutely no doubt when using this response that the item being evaluated cannot be any better than it currently is and is a desirable design feature.

2: Strongly Agree: This response indicates that the item being evaluated is very good and very helpful to the analyst/operator.

3: Generally Agree: This response indicates the item being evaluated is acceptable and helpful to the analyst/operator.

4: Generally Disagree: This response indicates the item being evaluated is unacceptable, but only minor improvements are required before it is acceptable. (Please indicate specifically what improvements need to be made.)

5: Strongly Disagree: This response indicates that the item being evaluated is unacceptable and major improvements are required to make it acceptable. (Please indicate specifically what improvements need to be made.)

6: Completely Disagree: There must be absolutely no doubt when using this response that the item being evaluated is unacceptable and must be completely redesigned or rewritten to be acceptable. (Please indicate specifically what improvements need to be made.)

0: Unknown: This response indicates that you do not have sufficient knowledge to answer the question or you have not experienced the action or item in question.

Based on your experience, rate your ability to perform the following functions with the Single Source Work Station:

For The OSINT (questions 1-36)

1.) The Single Source Work Station works well to perform the OSINT functions.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

Processing with OSINT assisted in performing the following operations:

2.) EMPLOYING THE OPEN SOURCE AUTOMATED LINK ANALYSIS TOOL (OSALAT) ON THE UNCLASSIFIED OSINT COLLECTOR WORKSTATION (OCW)

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

3.) Starting the Local Task Server

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

4.) Creating a Case File

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

5.) Opening a Case File

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

6.) Creating a Search Scenario

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

7.) Searching for Information in OSALAT

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

8.) Reviewing retrieved documents in the Document Editor

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

9.) Exporting Case Data

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

10.) CONFIGURING THE OSINT EXPORT TOOL

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

11.) Opening the Output Queue

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

12.) Opening the Export Tool

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

13.) Configuring the OSINT Export Scheduler

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

14.) Setting Export Type to Manual Updates

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

15.) EMPLOYING THE INDIVIDUAL, EVENTS, AND ORGANIZATIONS (IE&O) DATABASE

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

16.) Reviewing IE&O Data in the Entity Editor

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

17.) Creating a New Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
18.) Importing External Data into the Entity Editor							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
19.) Creating New Individual							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
20.) Adding a New Attribute to an Individual							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
21.) Adding an Event to the Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
22.) Adding a New Attribute to an Event							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
23.) Adding an Organization to the Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
24.) Adding a New Attribute to an Organization							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
25.) Adding Equipment to the Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
26.) Adding a New Attribute to a piece of Equipment							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
27.) Adding a Facility to the Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
28.) Adding a New Attribute to a Facility							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
29.) Adding a Unit to the Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
30.) Adding a New Attribute to a Unit							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
31.) Adding a Place to the Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
32.) Adding a New Attribute to a Place							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
33.) Creating Relationships in the Case							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0

34.) Adding Attributes to an Entity

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

35.) Publishing from Entity Editor to TMB

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

36.) Plotting from the Entity Editor to the Map

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

For the IMINT Section (37-47)

37.) The Single Source Work Station works well to perform the IMINT functions.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

Processing with IMINT assisted in performing the following operations:

38.) PERFORMING IMAGERY OPERATIONS ON THE MIP

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

39.) Viewing an Image using Imagery Explorer (IE)

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

40.) Adding annotations to ELT

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

41.) Geo-registering and converting an image

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

42.) Exporting an image to the JMTK map (Draping)

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

43.) Placing an Image Icon on a map for display

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

44.) Pushing an Image from MIP to the ISS Multimedia Journal

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

45.) Pushing an Image from MIP to a Specific USER (ASWS) on the ISS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

46.) Pulling Imagery from ISS to MIP

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

47.) Pulling Products from IPL using JWICS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

For the COMINT Section (48-100)

48.) The Single Source Work Station works well to perform the COMINT functions.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

Processing with COMINT assisted in performing the following operations:

49.) OPERATING THE MASINT-AT INTERACTIVE CORRELATOR

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

50.) Performing a PDR query

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

51.) Creating a CDR from PDR(s)

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

52.) Performing a Candidate Search

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

53.) Correlating PDR to CDR

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

54.) Filtering Data Records

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

55.) Merging CDR's

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

56.) CONFIGURING THE COMINT EXPORT GATEWAY

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

57.) PERFORMING REFERENCE DATABASE OPERATIONS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

58.) QUERYING INTELLIGENCE SHARED SERVER DATABASES VIA THE WEB

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

59.) Querying database records on the ISS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

60.) Viewing queried records

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

61.) Sending selected data records to the Map on the ISS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

62.) MANAGING COMINT ALERTS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

63.) CORRECTING ERRED COMINT MESSAGES

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

64.) Identifying an erred SIGINT message							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
65.) Correcting erred SIGINT messages							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
66.) Deleting a bad SIGINT message							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
67.) Opening the COMINT Export Gateway							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
68.) Setting the update frequency							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
69.) Configuring the gateway output queue							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
70.) Performing manual data transfer functions							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
71.) Clearing the Export Gateway log							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
72.) Exiting the Export Gateway							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
73.) MANAGING COMINT CORRELATION RULE SETS							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
74.) OPERATING THE COMINT ANALYSIS TOOLSET							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
75.) Observing COMINT Case Explorer functions							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
76.) Observing COMINT-AT Editor functions							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
77.) Creating a Case folder							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
78.) Using Case Management features in the COMINT-AT Case Explorer							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0

79.) Setting field views in the COMINT-AT Editor

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

80.) Plotting COMINT data to the map from the COMINT-AT Editor

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

81.) Generating a U.S. Message Text Formatting (USMTF) message from COMINT data

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

82.) Viewing data record source messages

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

83.) Creating a Parsed Data Record (PDR) manually

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

84.) Using the COMINT Case Explorer Search tool to search for folder content

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

85.) Searching for Network, CDR, or PDR COMINT data records using the COMINT Case Explorer Search tool

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

86.) Performing manual correlation functions

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

87.) Performing Line of Bearing resolution

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

88.) Stopping, Starting, and Pausing the Correlator Service

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

89.) Sending selected Case Explorer products to TMB Folders

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

90.) Archiving PDRs

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

91.) Restoring archived PDRs

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

92.) OPERATING THE COMINT-AT GIST TOOL

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

93.) OPERATING THE COMINT-AT CRYPTANALYSIS TOOL

Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
------------------	---	---	---	---	---	---	---------------------	-------

94.) USING COMINT VISUALIZATION TOOLS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

95.) Viewing network visualization (network diagram)

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

96.) Editing network visualization (network diagram)

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

97.) Sending a USMTF message from COMINT visualization

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

98.) Viewing Order of Battle visualization

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

99.) Publishing COMINT visualizations to Microsoft PowerPoint

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

100.) PERFORMING NEAR REAL TIME INTELLIGENCE OPERATIONS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

For the HUMINT section (101-138)

101.) The Single Source Work Station works well to perform the HUMINT functions.

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

Processing with HUMINT assisted in performing the following operations:

102.) PERFORMING TWS, WEBGUARD AND WEBSHIELD OPERATIONS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

103.) Verifying proxy settings for WebShield operations

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

104.) Retrieving a collateral File via WebShield

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

105.) QUERYING THE DATABASE VIA THE WEB

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

106.) Querying database records on the ISS

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

107.) Viewing queried records

Completely Agree 1 2 3 4 5 6 Completely Disagree N/A=0

108.) Viewing Association, multimedia, or Cross Links for data in the Query Results window								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
109.) PERFORMING FILE TRANSFER PROTOCOL (FTP) OPERATIONS								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
110.) Initiating a new FTP session								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
111.) Setting initial directories for a selected profile								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
112.) Setting advanced settings								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
113.) CONFIGURING CHAMS ACE BLOCK II SYSTEM SETTINGS								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
114.) Configuring CHAMS System Settings								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
115.) PREPARING THE CI/HUMINT WORKSTATION FOR OPERATIONS (CF-73 LAPTOP) WITHIN THE ACE BLOCK II CONFIGURATION								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
116.) Unpacking the laptop components from the carrying case								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
117.) Assembling the computer								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
118.) Attaching other devices								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
119.) Applying power to the system								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
120.) CONFIGURING CHAMS ACE BLOCK II COMMUNICATIONS								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
121.) Configuring Windows 2000 Communications								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0
122.) Configuring the CHAMS Workstation to the ACE Classified Printer								
Completely Agree	1	2	3	4	5	6	Completely Disagree	N/A=0

123.) Configuring the CHAMS Address Book							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
124.) PERFORMING CHAMS REPORT MANAGER FUNCTIONS FOR ACE OPERATIONS							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
125.) Accessing Report Manager							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
126.) Creating a CI/HUMINT Report for ACE Transfer							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
127.) Queuing Reports for Correlation							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
128.) Sending Reports into the ISS							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
129.) Deleting Reports from the ACE ISS							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
130.) Editing a CI/HUMINT Report							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
131.) Plotting a CI/HUMINT Report							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
132.) PREPARING THE ACE CI/HUMINT WORKSTATION FOR MOVEMENT							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
133.) Terminating Operations							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
134.) Disassembling the system							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
135.) Storing the system							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
136.) ESTABLISHING AN ACE ADDRESS BOOK							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
137.) CONFIGURING THE ISS CHAMS WEB LINK INTERFACE							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0
138.) ESTABLISHING ISS DATA LINK USING THE WEB INTERFACE							
Completely Agree	1	2	3	4	5	6	Completely Disagree N/A=0

2.3.1.2.8 Documentation of Inter-Operability Difficulties--Problems Receiving/Sending Different Message Types Among (Intra/Inter) Battlefield Functional Areas (BFA) (table 7). This form—referenced in row 3, column 1 on the second page of table 4, Documentation of Inter-Operability—provides a rather comprehensive opportunity for soldiers to report difficulties receiving and sending different message types among the participating Functional Identities and for identifying both intra/inter-communication problems among the BFA. This form has been used in many of the ASAS sub-system LUTEs as well as the block 2 IOTE.

DOCUMENTATION OF INTEROPERABILITY PROBLEMS
DURING ANALYSIS AND CONTROL ELEMENT (ACE)
INITIAL OPERATIONAL TEST AND EVALUATION (IOTE)
BLOCK 2

BIO/BACKGROUND/POSITION

Name _____ PINno. _____ Date _____ Time _____
Please Print Mo/Da/Yr 0000-2400

Please circle ACE position (Functional Identity):

CCS SMART Multifunction Work Station RIS/ELINT SS AS SIT/IPB DBM
SIGINT Trusted Suite ISR CI/HUMINT OSINT

Please circle echelon:

BTN DIV BDE CORP EAC

MOPP(Please circle): 0 1 2 3 4

INSTRUCTIONS

For each of the listed MESSAGE TYPES, please indicate:

- whether you had PROBLEM RECEIVING
 - FROM WHOM was the message being sent (if known)
 - BRIEF DESCRIPTION of problem
- whether you had PROBLEM SENDING
 - TO WHOM were you sending the message
 - BRIEF DESCRIPTION of problem

Table 7. Documentation of inter-operability difficulties—problems receiving/sending different message types among (intra/inter) battlefield functional areas (BFA).

NAME _____

INTEROPERABILITY PROBLEMS

a. MESSAGE TYPE	b. PROBLEM RECEIVING (check if YES)	c. FROM WHOM (see below)	d. BRIEF DESCRIPTION (use reverse side if necessary)	e. PROBLEM SENDING (check if YES)	f. TO WHOM (see below)	g. BRIEF DESCRIPTION (use reverse side if necessary)
1. Tactical Reports (TACREP) (C111)						
2. Size, Activity, Location, Unit, Time, and Equipment Report (SALUTE) (S303)						
3. Intelligence Report (INTREP) (C110)						
4. Artillery Target Intelligence. Target Criteria Report (ATLTCRIT) (D281)						
5. Geometry Message (S201)						
6. Imagery Interpretation Report (IIR)						
7. Reconnaissance Exploitation Report (RECCEXREP) (C101)						
8. Radar Exploitation Report (REXREP) (X031)						
9. Intelligence Summary (INTSUM)						
10. Order Message (A423)						

c. FROM WHOM:

f. TO WHOM:

DIVISION LEVEL:

1) RWS 2) TOC 3) MSE 4) CNR 5) NTDR 6) SINGARS 7) EPLRS 8) AUTODIN 9) TROJAN SPIRIT 10) CGS 11) UAV 12) MCS 13) AFATDS 14) CSSCS 15) FAADC3I 16) ASAS ALL SOURCE 17) CHATS 18) IMETS 19) DTSS 20) ACT-E 21) FBCB2 22) AMDWS

BRIGADE LEVEL:

23) RWS 24) TOC 25) MSE 26) CNR 27) NTDR 28) SINGARS 29) EPLRS 30) AUTODIN 31) TROJAN SPIRIT 32) CGS 33) UAV 34) MCS 35) AFATDS 36) CSSCS 37) FAADC3I 38) ASAS ALL SOURCE 39) CHATS 40) IMETS 41) DTSS 42) ACT-E 43) FBCB2 44) AMDWS

Table 7. Documentation of inter-operability difficulties—problems receiving/sending different message types among (intra/inter) battlefield functional areas (BFA) (continued).

a. MESSAGE TYPE	b. PROBLEM RECEIVING (check if YES)	c. FROM WHOM (see below)	d. BRIEF DESCRIPTION (use reverse side if necessary)	e. PROBLEM SENDING (check if YES)	f. TO WHOM (see below)	g. BRIEF DESCRIPTION (use reverse side if necessary)
11. Operations Plan or Order Change Message (PLANORDCHG)						
12. Request for Information (RI) (F014)						
13. Response to Request for Information (RRI) (F015)						
14. Free-text Message (FREETEXT) (S302)						
15. Tactical Electronic Intelligence Report (TACELINT) (C121)						
16. Weather Forecast Message (WXFCST)						
17. Multiple Asset Status Report (MASTR) (S304)						
18. External Database Coordination (EDC) (C110M)						
19. Variable Message Format Message (VMF)						

c. FROM WHOM:

f. TO WHOM:

DIVISION LEVEL:

1) RWS 2) TOC 3) MSE 4) CNR 5) NTDR 6) SINCGARS 7) EPLRS 8) AUTODIN 9) TROJAN SPIRIT 10) CGS 11) UAV 12) MCS 13) AFATDS 14) CSSCS 15) FAADC3I 16) ASAS ALL SOURCE 17) CHATS 18) IMETS 19) DTSS 20) ACT-E 21) FBCB2 22) AMDWS

BRIGADE LEVEL:

23) RWS 24) TOC 25) MSE 26) CNR 27) NTDR 28) SINCGARS 29) EPLRS 30) AUTODIN 31) TROJAN SPIRIT 32) CGS 33) UAV 34) MCS 35) AFATDS 36) CSSCS 37) FAADC3I 38) ASAS ALL SOURCE 39) CHATS 40) IMETS 41) DTSS 42) ACT-E 43) FBCB2 44) AMDWS

Table 7. Documentation of inter-operability difficulties—problems receiving/sending different message types among (intra/inter) battlefield functional areas (BFA) (continued).

a. MESSAGE TYPE	b. PROBLEM RECEIVING (check if YES)	c. FROM WHOM (see below)	d. BRIEF DESCRIPTION (use reverse side if necessary)	e. PROBLEM SENDING (check if YES)	f. TO WHOM (see below)	g. BRIEF DESCRIPTION (use reverse side if necessary)
20. TIDAT (S305)						
21. ATLIEWTC (S308)						
22. MSGCHGREP (C001)						
23. AFU.MFR (C241)						
24. ATLATR (C281)						
25. RESOURCES (S507L)						
26. MAER (S301)						
27. MATM (X014)						
28. STOPJAM (S307)						
29. OBSERVED POSITION REPORT (K05.52)						

c. FROM WHOM:

f. TO WHOM:

DIVISION LEVEL:

1) RWS 2) TOC 3) MSE 4) CNR 5) NTDR 6) SINGARS 7) EPLRS 8) AUTODIN 9) TROJAN SPIRIT 10) CGS 11) UAV 12) MCS 13) AFATDS 14) CSSCS 15) FAADC3I 16) ASAS
ALL SOURCE 17) CHATS 18) IMETS 19) DTSS 20) ACT-E 21) FBCB2 22) AMDWS

BRIGADE LEVEL:

23) RWS 24) TOC 25) MSE 26) CNR 27) NTDR 28) SINGARS 29) EPLRS 30) AUTODIN 31) TROJAN SPIRIT 32) CGS 33) UAV 34) MCS 35) AFATDS 36) CSSCS 37) FAADC3I
38) ASAS ALL SOURCE 39) CHATS 40) IMETS 41) DTSS 42) ACT-E 43) FBCB2 44) AMDWS

Table 7. Documentation of inter-operability difficulties—problems receiving/sending different message types among (intra/inter) battlefield functional areas (BFA) (continued).

a. MESSAGE TYPE	b. PROBLEM RECEIVING (check if YES)	c. FROM WHOM (see below)	d. BRIEF DESCRIPTION (use reverse side if necessary)	e. PROBLEM SENDING (check if YES)	f. TO WHOM (see below)	g. BRIEF DESCRIPTION (use reverse side if necessary)
30. FREETEXT (K01.1)						
31. SPOT/SALUTE (K04.52)						
32. OVERLAY (K0.52)						
33. SCT digital picture (JPEG)						
34. RELEVANT COMMON PICTURE (MCO)						
35. SID (NITF)						
36. DIGITAL PICTURE (NITF)						
37. Other (specify)						

c. FROM WHOM:

f. TO WHOM:

DIVISION LEVEL:

1) RWS 2) TOC 3) MSE 4) CNR 5) NTDR 6) SINCGARS 7) EPLRS 8) AUTODIN 9) TROJAN SPIRIT 10) CGS 11) UAV 12) MCS 13) AFATDS 14) CSSCS 15) FAADC3I 16) ASAS
ALL SOURCE 17) CHATS 18) IMETS 19) DTSS 20) ACT-E 21) FBCB2 22) AMDWS

BRIGADE LEVEL:

23) RWS 24) TOC 25) MSE 26) CNR 27) NTDR 28) SINCGARS 29) EPLRS 30) AUTODIN 31) TROJAN SPIRIT 32) CGS 33) UAV 34) MCS 35) AFATDS 36) CSSCS 37) FAADC3I
38) ASAS ALL SOURCE 39) CHATS 40) IMETS 41) DTSS 42) ACT-E 43) FBCB2 44) AMDWS

2.3.1.2.9 Final Debrief—Analyst/Data Collector. These forms—referenced in rows 4 and 5, column 1 on the second page of table 4—provide an opportunity for analysts and data collectors, respectively, to provide a final documentation of problems reported on the system. Questions asked (see pages 73 and 78) tend to be broad in nature concerning the functionalities operational capability and the capability of some of the major parameters needed to navigate through the software.

FINAL DEBRIEF
ASAS SINGLE SOURCE OPERATOR/ANALYST QUESTIONNAIRE

Purpose: This questionnaire is used to capture your views concerning the operational aspects and utility of ASAS. The data you provide will help decision makers evaluate how effective the ASAS has been designed to assist you in the performance of your intelligence gathering, processing and analysis tasks.

PRIVACY ACT STATEMENT

Public Law 93-573, called the Privacy Act of 1974, requires that you be informed of the purpose and uses to be made of the information that is collected.

The Department of the Army may collect the information requested under authority of 10 United States Code 137.

Providing information in this questionnaire is voluntary. Failure to respond to any particular question will not result in any penalty for the respondent.

The information collected in this survey will be used to evaluate military intelligence systems and their utilization.

The information will be used for research and analysis only. The US Army Operational Evaluation Command has primary research, analysis, and evaluation responsibility.

Instructions: First, read the descriptions of the seven possible responses and then read each question carefully and circle the response that appropriately reflects your opinion. Although not required, we would welcome any written comment you may provide in response to a particular question. Please use the reverse of the page for these entries and key your responses to the question number.

GENERAL INFORMATION.

Name/Rank: _____ Position Observed: _____

Rating Scheme: The rating criteria used for the following questions are defined below. Please ensure that you understand these rating criteria when answering questions with a rating scheme.

- 1: Completely Disagree:** There must be absolutely no doubt when using this response that the item being evaluated is of unacceptable design, composition, or value and must be completely redesigned, rewritten, or modified to be acceptable.
- 2: Strongly Disagree:** This response indicates that the item being evaluated is unacceptable and major improvements are required to make it acceptable.
- 3: Generally Disagree:** This response indicates the item being evaluated is unacceptable, but only minor improvements are required before it is acceptable.
- 4: Generally Agree:** This response indicates the item being evaluated is acceptable and helpful to the analyst/operator.
- 5: Strongly Agree:** This response indicates that the item being evaluated is very good and very helpful to the analyst/operator.
- 6: Completely Agree:** There must be absolutely no doubt when using this response that the item being evaluated cannot be any better designed, written, or has great value and is a desirable system feature or function.
- 9: Unknown:** This response indicates that you do not have sufficient knowledge to answer the question or you have not experienced the action or item in question.

1 = Completely Disagree	3 = Generally Disagree	5 = Strongly Agree	9 = Unknown
2 = Strongly Disagree	4 = Generally Agree	6 = Completely Agree	

SINGLE SOURCE OPERATOR/ANALYST QUESTIONNAIRE

- | | |
|---|---------------|
| (1) I am confident in my ability to properly populate, store, and maintain Single Source databases. | 1 2 3 4 5 6 9 |
| (2) I am confident in the accuracy of the information contained in the Single Source databases. | 1 2 3 4 5 6 9 |
| (3) ASAS significantly helped me do my job as a COMINT Analyst. | 1 2 3 4 5 6 9 |
| (4) ASAS assisted me in producing a COMINT picture of the battlefield that was complete. | 1 2 3 4 5 6 9 |
| (5) ASAS assisted me in producing a COMINT picture of the battlefield that was accurate. | 1 2 3 4 5 6 9 |
| (6) ASAS assisted me in producing a COMINT picture of the battlefield that was timely. | 1 2 3 4 5 6 9 |
| (7) ASAS significantly helped me do my job as an ELINT Analyst. | 1 2 3 4 5 6 9 |
| (8) ASAS assisted me in producing an ELINT picture of the battlefield that was complete. | 1 2 3 4 5 6 9 |
| (9) ASAS assisted the analyst observed in producing an ELINT picture of the battlefield that was accurate. | 1 2 3 4 5 6 9 |
| (10) ASAS assisted me in producing an ELINT picture of the battlefield that was timely. | 1 2 3 4 5 6 9 |
| (11) As the Target Analyst, I was able to significantly contribute to the ACE targeting process by identifying high payoff targets. | 1 2 3 4 5 6 9 |
| (12) The time to develop, run, and display queries against ASAS databases does not adversely effect analysis. | 1 2 3 4 5 6 9 |
| (13) The alarm process worked well. | 1 2 3 4 5 6 9 |
| (14) Single Source graphics tools enabled me to display and evaluate the effects that terrain and mobility factors may have on enemy courses of action. | 1 2 3 4 5 6 9 |
| (15) The ability to automatically generate TACREPS/TACELINTS through the Single Source TACREP generator was effective. | 1 2 3 4 5 6 9 |
| (16) The Single Source leadership is fully aware of the capabilities of ASAS. | 1 2 3 4 5 6 9 |
| (17) The Single Source leadership is aware of the required interaction with the all source leadership to support ACE operations. | 1 2 3 4 5 6 9 |

1 = Completely Disagree	3 = Generally Disagree	5 = Strongly Agree	9 = Unknown				
2 = Strongly Disagree	4 = Generally Agree	6 = Completely Agree					
(18) Based on my observations and interactions with other Single Source Analysts, we were able to effectively contribute to answering PIRs.	1	2	3	4	5	6	9
(19) ADP operations personnel appeared to be always able to identify the source of software problem.	1	2	3	4	5	6	9
(20) ADP operations personnel appeared to be always able to access the command line and immediately fix software problems.	1	2	3	4	5	6	9
(21) Single Source systems administrator requires access to system software through the command line.	1	2	3	4	5	6	9
(22) ASAS operations would be significantly improved if a designated operator/analyst was trained in UNIX and had command line access.	1	2	3	4	5	6	9
(23) ASAS enabled me to handle the volume of messages received during the LUT.	1	2	3	4	5	6	9
(24) The inability to maintain continual communication with external systems impacted on my ability to conduct Single Source analysis.	1	2	3	4	5	6	9
(25) The Single Source enclave was easily <u>displaced</u> in MOPP 0.	1	2	3	4	5	6	9
(26) The Single Source enclave was easily <u>emplaced</u> in MOPP 0.	1	2	3	4	5	6	9
(27) The Single Source enclave was easily <u>displaced</u> in MOPP IV.	1	2	3	4	5	6	9
(28) The Single Source enclave was easily <u>emplaced</u> in MOPP IV.	1	2	3	4	5	6	9
(29) I was able to accomplish analytical tasks using ASAS while operating in MOPP IV.	1	2	3	4	5	6	9
(30) Software failures during the tactical phase of the LUT did not cause a loss of confidence in the system.	1	2	3	4	5	6	9
(31) The majority of the software problems can be traced to database permissions being improperly set.	1	2	3	4	5	6	9
(32) When a hardware problem occurred, military maintenance personnel <u>responded</u> in a timely manner.	1	2	3	4	5	6	9
(33) When a hardware problem occurred, military maintenance personnel <u>isolated</u> the problem quickly.	1	2	3	4	5	6	9
(34) When a hardware problem occurred, military maintenance personnel were able to <u>fix</u> the problem without difficulty.	1	2	3	4	5	6	9
(35) ASL and PLL allocations at organic level appear to be sufficient. Downtime due to lack of spare parts was not experienced.	1	2	3	4	5	6	9

1 = Completely Disagree	3 = Generally Disagree	5 = Strongly Agree	9 = Unknown
2 = Strongly Disagree	4 = Generally Agree	6 = Completely Agree	
(36) Operating under ACE Concepts and Doctrine enhances the ability to provide complete, timely, and accurate intelligence for tactical decision making by the G3 or operational staff.		1 2 3 4 5 6 9	
(37) Sufficient personnel were available to operate ASAS on a routine basis.		1 2 3 4 5 6 9	
(38) The ability to pass graphic formatted information to outside the ACE is critical to the utility of ASAS.		1 2 3 4 5 6 9	
(39) The ability to maintain continuity of operations during displacement is a required capability.		1 2 3 4 5 6 9	
(40) The basic load of ASAS-unique digital maps is sufficient to support contingency operations.		1 2 3 4 5 6 9	
(41) Dedicated contractor ADP and hardware support is required to support the ASAS at an acceptable operational level.		1 2 3 4 5 6 9	
(42) The ability to exchange databases with the All Source enclave and the CE via the EDC message was effective.		1 2 3 4 5 6 9	
(43) ASAS does not present any Safety problems.		1 2 3 4 5 6 9	
(44) ASAS does not present any Health Hazards.		1 2 3 4 5 6 9	
(45) I was able to accomplish my individual critical tasks using ASAS while operating in MOPP IV.		1 2 3 4 5 6 9	
(46) I was able to accomplish my collective critical tasks using ASAS while operating in MOPP IV.		1 2 3 4 5 6 9	
(47) Additional personnel are not required to establish and sustain the operations of a field SCIF.		1 2 3 4 5 6 9	
(48) ASAS allows me to edit compartmented information prior to release to "protect" from unauthorized disclosure.		1 2 3 4 5 6 9	
(49) ASAS conforms with TEMPEST requirements and no TEMPEST violations were noted during ASAS operations.		1 2 3 4 5 6 9	
(50) The operator/analyst can easily use the ASAS to properly sanitize messages prior to dissemination to a collateral source.		1 2 3 4 5 6 9	
(51) The Single Source TEXTA database was complete and accurate and a useful COMINT tool.		1 2 3 4 5 6 9	
(52) The Single Source EPL database was complete and accurate and a useful ELINT tool.		1 2 3 4 5 6 9	
(53) The ASAS automated graphics tools (i.e., building AOIs, boundaries, etc.) were easy to use.		1 2 3 4 5 6 9	

FINAL DEBRIEF
ASAS SINGLE SOURCE DATA COLLECTOR QUESTIONNAIRE

Purpose: This questionnaire is used to capture your views concerning the operational aspects and utility of ASAS. The data you provide will help decision makers evaluate how effective the ASAS has been designed to assist you in the performance of your intelligence gathering, processing and analysis tasks.

PRIVACY ACT STATEMENT

Public Law 93-573, called the Privacy Act of 1974, requires that you be informed of the purpose and uses to be made of the information that is collected.

The Department of the Army may collect the information requested under authority of 10 United States Code 137.

Providing information in this questionnaire is voluntary. Failure to respond to any particular question will not result in any penalty for the respondent.

The information collected in this survey will be used to evaluate military intelligence systems and their utilization.

The information will be used for research and analysis only. The US Army Operational Evaluation Command has primary research, analysis, and evaluation responsibility.

Instructions: First, read the descriptions of the seven possible responses and then read each question carefully and circle the response that appropriately reflects your opinion. Although not required, we would welcome any written comment you may provide in response to a particular question. Please use the reverse of the page for these entries and key your responses to the question number.

GENERAL INFORMATION.

Name/Rank: _____ Position Observed: _____

Rating Scheme: The rating criteria used for the following questions are defined below. Please ensure that you understand these rating criteria when answering questions with a rating scheme.

1: Completely Disagree: There must be absolutely no doubt when using this response that the item being evaluated is of unacceptable design, composition, or value and must be completely redesigned, rewritten, or modified to be acceptable.

2: Strongly Disagree: This response indicates that the item being evaluated is unacceptable and major improvements are required to make it acceptable.

3: Generally Disagree: This response indicates the item being evaluated is unacceptable, but only minor improvements are required before it is acceptable.

4: Generally Agree: This response indicates the item being evaluated is acceptable and helpful to the analyst/operator.

5: Strongly Agree: This response indicates that the item being evaluated is very good and very helpful to the analyst/operator.

6: Completely Agree: There must be absolutely no doubt when using this response that the item being evaluated cannot be any better designed, written, or has great value and is a desirable system feature or function.

9: Unknown: This response indicates that you do not have sufficient knowledge to answer the question or you have not experienced the action or item in question.

1 = Completely Disagree	3 = Generally Disagree	5 = Strongly Agree	9 = Unknown
2 = Strongly Disagree	4 = Generally Agree	6 = Completely Agree	

SINGLE SOURCE DATA COLLECTOR QUESTIONNAIRE

- | | |
|--|---------------|
| (1) I am confident in my ability to properly populate, store, and maintain Single Source databases. | 1 2 3 4 5 6 9 |
| (2) I am confident in the accuracy of the information contained in the Single Source databases. | 1 2 3 4 5 6 9 |
| (3) ASAS significantly helped the analyst observed do his/her job as a COMINT Analyst. | 1 2 3 4 5 6 9 |
| (4) ASAS assisted the analyst observed in producing a COMINT picture of the battlefield that was complete. | 1 2 3 4 5 6 9 |
| (5) ASAS assisted the analyst observed in producing a COMINT picture of the battlefield that was accurate. | 1 2 3 4 5 6 9 |
| (6) ASAS assisted the analyst observed in producing a COMINT picture of the battlefield that was timely. | 1 2 3 4 5 6 9 |
| (7) ASAS significantly helped the analyst observed do his/her job as an ELINT Analyst. | 1 2 3 4 5 6 9 |
| (8) ASAS assisted the analyst observed in producing an ELINT picture of the battlefield that was complete. | 1 2 3 4 5 6 9 |
| (9) ASAS assisted the analyst observed in producing an ELINT picture of the battlefield that was accurate. | 1 2 3 4 5 6 9 |
| (10) ASAS assisted the analyst observed in producing an ELINT picture of the battlefield that was timely. | 1 2 3 4 5 6 9 |
| (11) The Target Analyst was able to significantly contribute to the ACE targeting process by identifying high payoff targets. | 1 2 3 4 5 6 9 |
| (12) The time to develop, run, and display queries against ASAS databases does not adversely effect analysis. | 1 2 3 4 5 6 9 |
| (13) The alarm process worked well. | 1 2 3 4 5 6 9 |
| (14) Single Source graphics tools enabled the analyst to display and evaluate the effects that terrain and mobility factors may have on enemy courses of action. | 1 2 3 4 5 6 9 |
| (15) The ability to automatically generate TACREPS/TACELINTS through the Single Source TACREP generator was effective. | 1 2 3 4 5 6 9 |
| (16) The Single Source leadership is fully aware of the capabilities of ASAS. | 1 2 3 4 5 6 9 |
| (17) The Single Source leadership is aware of the required interaction with the all source leadership to support ACE operations. | 1 2 3 4 5 6 9 |

1 = Completely Disagree	3 = Generally Disagree	5 = Strongly Agree	9 = Unknown
2 = Strongly Disagree	4 = Generally Agree	6 = Completely Agree	
(18) Based on my observations, the interactions with other Single Source Analysts enabled them to effectively contribute to answering PIRs.	1 2 3 4 5 6 9		
(19) ADP operations personnel appeared to be always able to identify the source of software problem.	1 2 3 4 5 6 9		
(20) ADP operations personnel appeared to be always able to access the command line and immediately fix software problems.	1 2 3 4 5 6 9		
(21) Single Source systems administrator requires access to system software through the command line.	1 2 3 4 5 6 9		
(22) ASAS operations would be significantly improved if a designated operator/analyst was trained in UNIX and had command line access.	1 2 3 4 5 6 9		
(23) ASAS enabled the analyst observed to handle the volume of messages received during the LUT.	1 2 3 4 5 6 9		
(24) The inability to maintain continual communication with external systems impacted on the ability to conduct Single Source analysis.	1 2 3 4 5 6 9		
(25) The Single Source enclave was easily <u>displaced</u> in MOPP 0.	1 2 3 4 5 6 9		
(26) The Single Source enclave was easily <u>emplaced</u> in MOPP 0.	1 2 3 4 5 6 9		
(27) The Single Source enclave was easily <u>displaced</u> in MOPP IV.	1 2 3 4 5 6 9		
(28) The Single Source enclave was easily <u>emplaced</u> in MOPP IV.	1 2 3 4 5 6 9		
(29) The analyst observed was able to accomplish analytical tasks using ASAS while operating in MOPP IV.	1 2 3 4 5 6 9		
(30) Software failures during the tactical phase of the LUT did not cause a loss of confidence in the system.	1 2 3 4 5 6 9		
(31) The majority of the software problems can be traced to database permissions being improperly set.	1 2 3 4 5 6 9		
(32) When a hardware problem occurred, military maintenance personnel <u>responded</u> in a timely manner.	1 2 3 4 5 6 9		
(33) When a hardware problem occurred, military maintenance personnel <u>isolated</u> the problem quickly.	1 2 3 4 5 6 9		
(34) When a hardware problem occurred, military maintenance personnel were able to <u>fix</u> the problem without difficulty.	1 2 3 4 5 6 9		
(35) ASL and PLL allocations at organic level appear to be sufficient. Downtime due to lack of spare parts was not experienced.	1 2 3 4 5 6 9		
(36) Operating under ACE Concepts and Doctrine enhances the ability to provide complete, timely, and accurate intelligence for tactical decision making by the G3 or operational staff.	1 2 3 4 5 6 9		

1 = Completely Disagree	3 = Generally Disagree	5 = Strongly Agree	9 = Unknown
2 = Strongly Disagree	4 = Generally Agree	6 = Completely Agree	
(37) Sufficient personnel were available to operate ASAS on a routine basis.		1 2 3 4 5 6 9	
(38) The ability to pass graphic formatted information to outside the ACE is critical to the utility of ASAS.		1 2 3 4 5 6 9	
(39) The ability to maintain continuity of operations during displacement is a required capability.		1 2 3 4 5 6 9	
(40) The basic load of ASAS-unique digital maps is sufficient to support contingency operations.		1 2 3 4 5 6 9	
(41) Dedicated contractor ADP and hardware support is required to support the ASAS at an acceptable operational level.		1 2 3 4 5 6 9	
(43) ASAS does not present any Safety problems.		1 2 3 4 5 6 9	
(44) ASAS does not present any Health Hazards.		1 2 3 4 5 6 9	
(45) The Operator/Analyst was able to accomplish the individual critical tasks using ASAS while operating in MOPP IV.		1 2 3 4 5 6 9	
(46) The Operator/Analyst was able to accomplish the collective critical tasks using ASAS while operating in MOPP IV.		1 2 3 4 5 6 9	
(47) Additional personnel are not required to establish and sustain the operations of a field SCIF.		1 2 3 4 5 6 9	
(48) ASAS allows the Operator/Analyst to edit compartmented information prior to release to "protect" from unauthorized disclosure.		1 2 3 4 5 6 9	
(49) ASAS conforms with TEMPEST requirements and no TEMPEST violations were noted during ASAS operations.		1 2 3 4 5 6 9	
(50) The Operator/Analyst can easily use the ASAS to properly sanitize messages prior to dissemination to a collateral source.		1 2 3 4 5 6 9	
(51) The Single Source TEXTA database was complete and accurate and a useful COMINT tool		1 2 3 4 5 6 9	
(53) The ASAS automated graphics tools (i.e., building AOIs, boundaries, etc.) were easy to use.		1 2 3 4 5 6 9	

2.3.2 Use of Model 2 for MANPRINT Evaluation of the Heavy Equipment Transporter System (HETS)

The model designated as model 2 appears to work well with soldiers who have relatively low verbal skill like those who operate and maintain the Heavy Equipment Transporter System (HETS) and when the critical tasks have been identified.

2.3.2.1 Resources Used for MANPRINT Evaluation of HETS. In this test, there were about 50 players who were responsible for operating and maintaining the system. In order to collect sufficient Reliability Availability and Maintainability (RAM) data on the HETS equipment, the test took 6 months to complete. The MANPRINT Manager developed the data collection plan, designed the data collection instruments and directed the data collection process with two MANPRINT support personnel.

2.3.2.1.1 Acquiring a Contractor to Support MANPRINT Evaluation. When assigned to the Heavy Equipment Transporter System (HETS) test as MANPRINT Manager, the Test Officer indicated that one of their contract data collectors could be dedicated to support the MANPRINT effort. The one selected had system knowledge—he knew automotive equipment, had rebuilt vehicles, and had data processing skills. He had been a U.S. Army Aviation Warrant Officer who was riffed out of the service. Following selection of this individual to support the MANPRINT effort, the data collection and analysis effort was scoped out in greater detail.

2.3.2.1.2 Acquiring a TEMP-Hire to Support MANPRINT Evaluation. As the data collection process was progressing, Operational Evaluation Command (OEC), now Army Evaluation Command (AEC), indicated that they didn't think there was enough support for the MANPRINT effort; accordingly the MANPRINT effort was supplemented with support from a government TEMP-hire worker. As the MANPRINT data collection process was already under way, it seemed appropriate to begin by letting the TEMP-hire work with the original contractor data collector to get him “read-in.” Conceptually, the plan seemed appropriate, but being new to supervisory responsibilities, it was not understood that contract personnel cannot direct/supervise government employees. Early-on the arrangement seemed workable, but the contract data collector began to be more directive rather than advisory when the MANPRINT Manager was not present. When the TEMP hire documented this conflict in writing and pointed out the inappropriate supervisory role that had emerged, it was again necessary to re-scope the effort.

2.3.2.2 Data Collection Procedures for MANPRINT Evaluation of the HETS. The basic data collection strategy for this effort involved conducting a series of individual interviews with each of the system operators (drivers and assistant drivers) and system maintainers.

2.3.2.2.1 MANPRINT Interview Protocol Used With HETS Operators and Maintainers. The interviews involved use of a common set of questions comprised of about four pages for each of the operational and maintenance critical tasks keyed to each of the MANPRINT domains

(see page 85). The set of interview questions for each of the operator critical tasks were bound together in a booklet; a comparable booklet was compiled for system maintainers.

2.3.2.2.2 Emerging Concerns for a HETS Task. To support the interview process, a booklet containing sheets documenting the emerging concerns associated with performing each task was provided for reference and as a possible memory jogger for each interviewee (see page 89). As each interview was conducted, new concerns addressed by the interviewee were added to this list.

2.3.2.2.3 Technical Manual Procedure for Performing Task Being Interviewed. During discussion of the interview procedure with the Training Systems Manager (TSM), he expressed concern that the interviews were being conducted within a shelter rather than outside where the M1070 cab and M1000 semi-trailer were located. His concern was that when a problem is noted, ambiguity about the equipment being discussed could arise. To address this concern and to provide a comfortable environment for the soldiers to formulate their thoughts, the interview process was facilitated by use of tabbed pages from the appropriate Technical Manuals (TM) that showed step by step procedures (with illustrations) for conducting the task currently under discussion (table 17, see page 90). During the interview process, the interviewer usually sat opposite the soldier and the booklets containing the emerging list of concerns and the TM could be easily rotated on the table so that the interviewee could be very specific about his problem descriptions.

2.3.2.2.4 Supplementary MANPRINT Data Collection. Conflict between Contract and TEMP-Hire cited in section 2.3.2.1.2, in part, stimulated the need to re-scope the MANPRINT Evaluation effort. Emerging findings from early interviews had indicated that there were concerns about temperature and noise in and around the HETS cab. As the first set of interviews had been pretty much completed by this time, the TEMP hire was directed to get some hard data to determine whether there really was a temperature and noise problem. In order to collect this data, the TEMP hire was provided with a sound pressure meter and thermometer and instructed to make arrangements to go out with the drivers. He was given an experimental design for collecting temperature and noise data. Results of that data collection effort are presented in appendix I. Studying the results tables and the accompanying figure should provide sufficient information for discerning that design. Presentation of this description indicates the multiplier effect of providing additional support to the MANPRINT data collection effort. Had the contractor and TEMP support not been provided, the MANPRINT manager would probably have had to be content with completing a single set of interviews (conducted by himself) involving each HETS operator and maintainer.

HETS MODEL 2 USED WITH LIST OF CONCERNS AND TABBED TMS

17. TASK: Load a Disabled Payload on a M1070 Tractor and a M1000 Semi-trailer Combination Using Dual Winches (-14 pp. 2-125 to 2-130)

1. Did you perform or observe this task being performed? (Y N)

If No, go to sheet for next TASK.

2. Problems?

a. Have you had any problems in performing this task? (Y N)

1) If No, go to 2b.

2) If Yes, please describe: _____

b. Are you aware of problems others have had in performing this task?
(Y N) [refer to sheet of concerns]

1) If No to 2a and 2b, to 6.

2) If Yes, please describe: _____

3. Which concerns are most important (up to 3)? _____

Indicate if there are other problems which you do not see on the sheet of concerns:

Problem Frequency (when ~ task is being performed) Circle letter indicating judgment.

CONCERN

<u>1st</u>	<u>2nd</u>	<u>3rd</u>	
A	A	A	Frequent -- continuously experienced
B	B	B	Probable -- will occur several times
C	C	C	Occasional -- will occur several times
D	D	D	Remote -- unlikely but possible
E	E	E	Improbable -- very unlikely to occur

Problem Severity: Circle Roman numeral indicating judgment.

CONCERN

<u>1st</u>	<u>2nd</u>	<u>3rd</u>	
I	I	I	Catastrophic -- death or systems loss
II	II	II	Critical -- severe injury or major system damage
III	III	III	Marginal -- minor injury or minor system damage
IV	IV	IV	Negligible -- less than minor injury or system damage

4. If Yes to 2, could one or more of these problems have been avoided by using:

a. More people? (Y N)

1) If Yes, how many more?

b. A different procedure? (Y N) If Yes, please describe:

1) What is wrong with current procedure?

2) What changes can you recommend?

3) What modification of the procedure might make the task “doable” with only two soldiers?

c. An equipment modification (Y N)

1) Please describe your recommendations:

d. More lecture training? (Y N)

e. More hands-on training? (Y N)

f. Another training procedure? (Y N)

1) If Yes, please describe.

g. Greater caution? (Y N)

1) If Yes, does performing this task create a safety hazard (for the soldier or equipment)?
(Y N)

2) If Yes, please describe.

5. Job Stress

a. Please indicate on the following scale the extent this task must be performed at the same (or nearly the same) time as other tasks (TIME STRESS)

- 1 = No overlap
- 2 = Little overlap
- 3 = Occasional overlap
- 4 = Frequent overlap
- 5 = Very frequent overlap

If 4 or 5, which other task(s)? _

b. Please indicate on the following scale the extent conscious mental effort (or concentration) is required to perform the task (MENTAL STRESS)

- 1 = None needed
- 2 = Little needed
- 3 = Moderate amount needed

(a) Why? _____

4 = Extensive amount needed

(a) Why? _____

c. Please indicate on the following scale the extent performing this task requires physical effort (PHYSICAL STRESS).

- 1 = No demand
- 2 = Little demand
- 3 = Moderate demand
- 4 = Heavy demand
- 5 = Very heavy demand

(a) Why? _____

d. Please indicate on the following scale the extent performing this task causes (for Operators: you to feel) (for Data Collectors: you to observe signs of) confusion, frustration, or anxiety (PSYCHOLOGICAL STRESS)

- 1 = None
- 2 = Little
- 3 = Moderate
- 4 = High

a) Why? _____

5 = Intense

(a)Why? _____

6. Manual Description of Procedure for Performing This Task (turn to pages in TM for this task)

(Y = Acceptable N = Changes Needed)

a. Are you aware of anything which is not technically correct in the:

- 1) Written procedure (Y N)
(a) If Yes, describe problem.

- 2) Figures or drawings (Y N)
(a) If Yes, describe problem.

b. Are you aware of anything which is not understandable in the: _____

- 1) Written procedure (Y N)
(a) If Yes,

why? _____

- 2) Figures or drawings (Y N)
(a) If Yes,

why? _____

CONCERNS ASSOCIATED WITH

17. TASK: Load a disabled payload on a M1070 tractor and a M1000 semi-trailer combination **using** dual winches
9. (S) WINCH OPERATION — Can't see cables, must use spotter.
10. (S) ENGINE KILL SWITCH — Required, PTO is in CAB, too far.
15. PTO SWITCH/LIGHT — Spacing too far, relocate.
21. (S) CHAINING A TANK — Must reach, arms extended, with chains (30—100 lbs) can present potential back injury situation. Females only 65% (average) of males upper body strength. Must crawl under load to rig it.
23. PAYLOAD CHOCKS — Replace nuts and bolts with quick release pins.
29. (S) LOADING, WINCHING, SECURING LOAD — Load old system in 15 minutes, this one takes an hour. Can't see winch cables, tie downs are not user friendly, must climb under load to secure it, must count chain links.
31. TIE DOWNS — Not enough, relocate, strength, no. of shackles.

Figure 1. Technical manual procedure for performing task being interviewed.

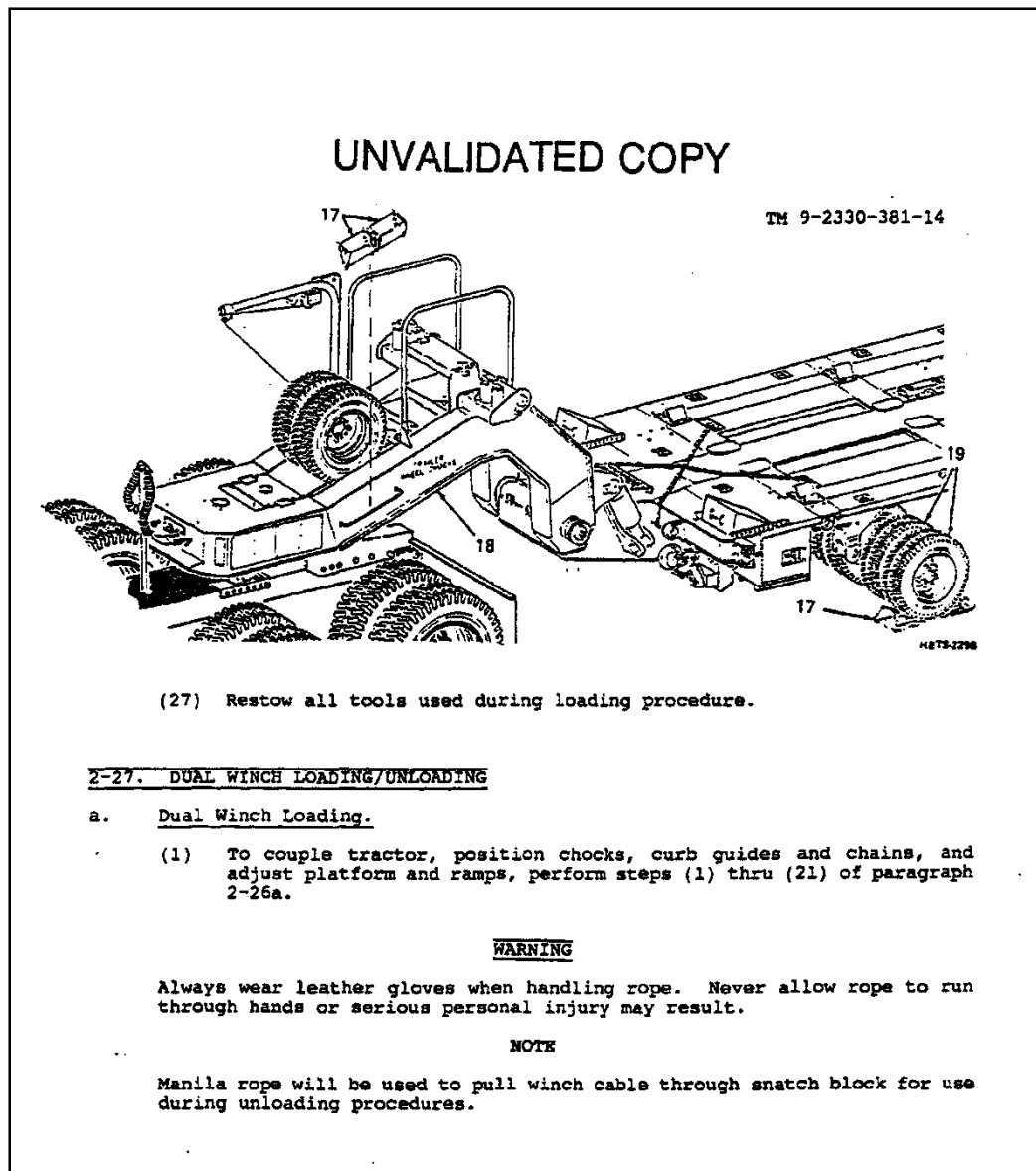


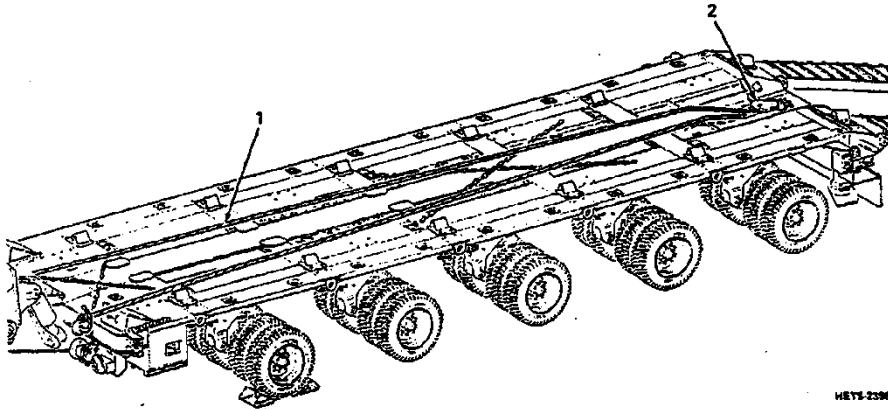
Figure 1. Technical manual procedure for performing task being interviewed (continued).

TM 9-2330-381-14

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2-27. DUAL WINCH LOADING/UNLOADING (CONT)

- (2) Remove manila rope (1) from semitrailer storage compartment. Starting from front of trailer, pass one end of manila rope (1) through snatch block (2) back to front of trailer.
- (3) Secure both ends of manila rope (1) to lifting eyes on platform.



HE75-2396

WARNING

Observe the following precautions during the loading process:

If possible, provide ample clear space behind the disabled payload during loading to protect personnel and prevent equipment damage should cables break while payload is being loaded.

All ground personnel must stand clear of loading cables.

Make sure winch cables are not kinked and all blocks and shackles are in good condition and properly secured.

Make sure winch cables are inspected in accordance with TB 43-0142 or serious personal injury may result.

Extreme caution should be exercised during any operation on a slope.

Two ground spotters must stand off each rear corner of the semitrailer and maintain visual contact with the winch operator. The spotters must observe cables, snatch blocks, shackles, and payload position during loading.

Figure 1. Technical manual procedure for performing task being interviewed (continued).

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TM 9-2330-381-14

WARNING

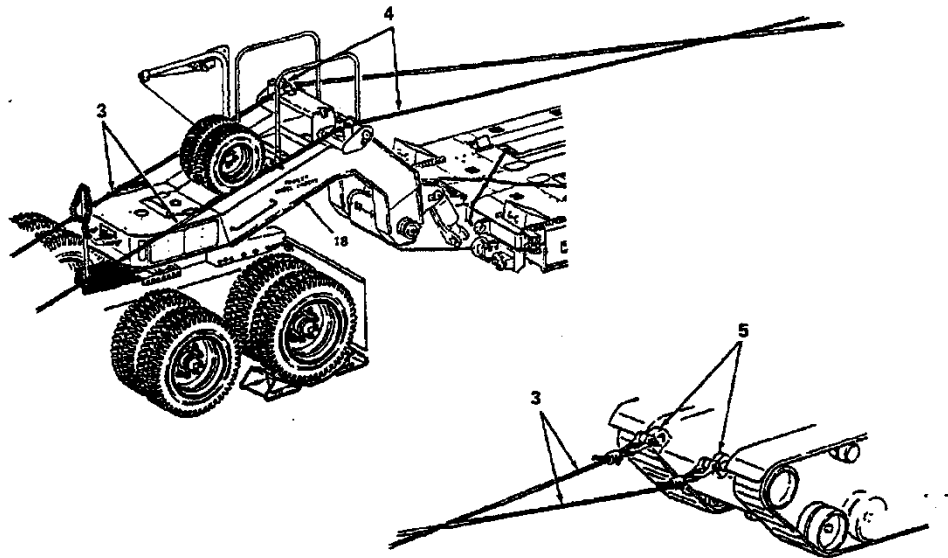
During winch-on operations on a downgrade, the payload must be restrained from the rear with some other vehicle to prevent possible loss of control of the payload.

Do not overload towing vehicle winches. Know the ratings of the winches being used and any protection devices (such as shear pins), or serious personal injury or death may result.

At no time during any loading operations should personnel be on the semitrailer bed or serious injury to personnel and damage to equipment may result.

Always wear leather gloves when handling cable. Never allow cable to run through hands or serious injury may result.

- (4) Unhook winch cables from stowage point on towing vehicle. Winch operator pay out enough winch cables (3) to pass through both gooseneck fairleads (4).
- (5) Cross winch cables (3) and attach clevis end of winch cables to upper recovery eyes (5) on payload.



HE75-240C

- (6) Station ground spotters on each side of payload vehicle to provide directions to winch operator during winching operation.

Figure 1. Technical manual procedure for performing task being interviewed (continued).

TM 9-2330-381-14

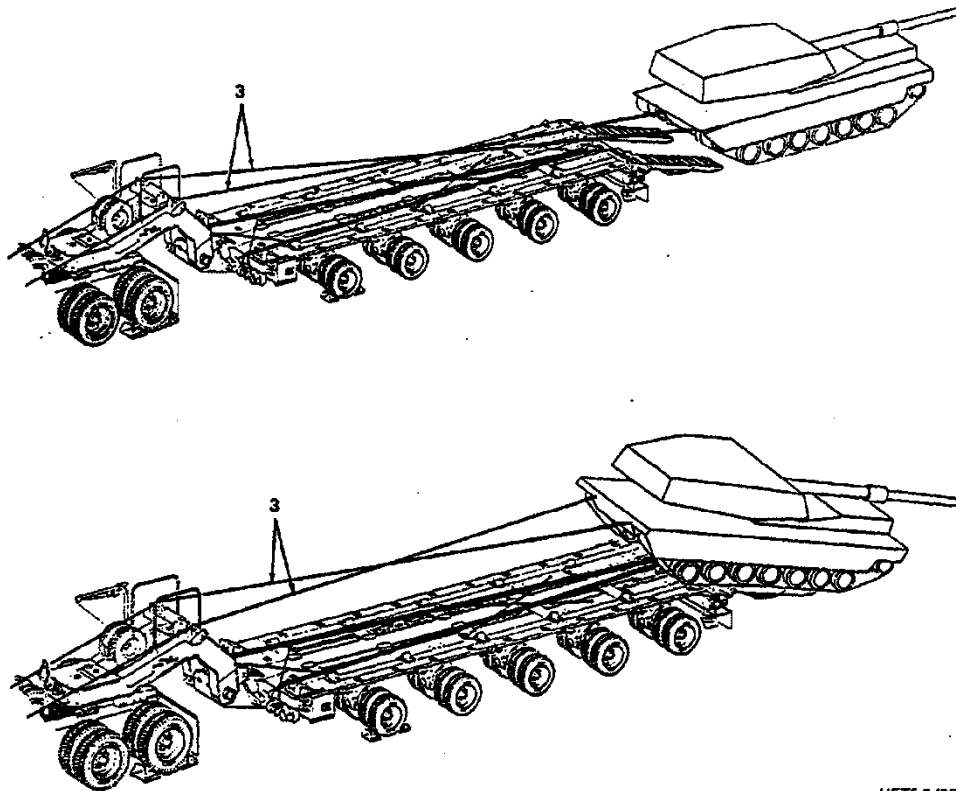
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2-27. DUAL WINCH LOADING/UNLOADING (CONT)

CAUTION

If the payload does not have a working track, use boards or sheets of wood to protect the semitrailer loading ramp and beavertail from the payload towing shackles or lifting eyes, or damage to the semitrailer and excess strain on the winches may result.

- (7) Using winches, winch operator pulls payload into alignment with ramps. Slowly pull payload up ramps onto platform, keeping both winch cables (3) under tension at all times. Continue to winch payload onto platform.



HETS-2438

CAUTION

When payload road wheels are over the semitrailer front bogies, the cables must be uncrossed or damage to the gooseneck or cables may result.

Figure 1. Technical manual procedure for performing task being interviewed (continued).

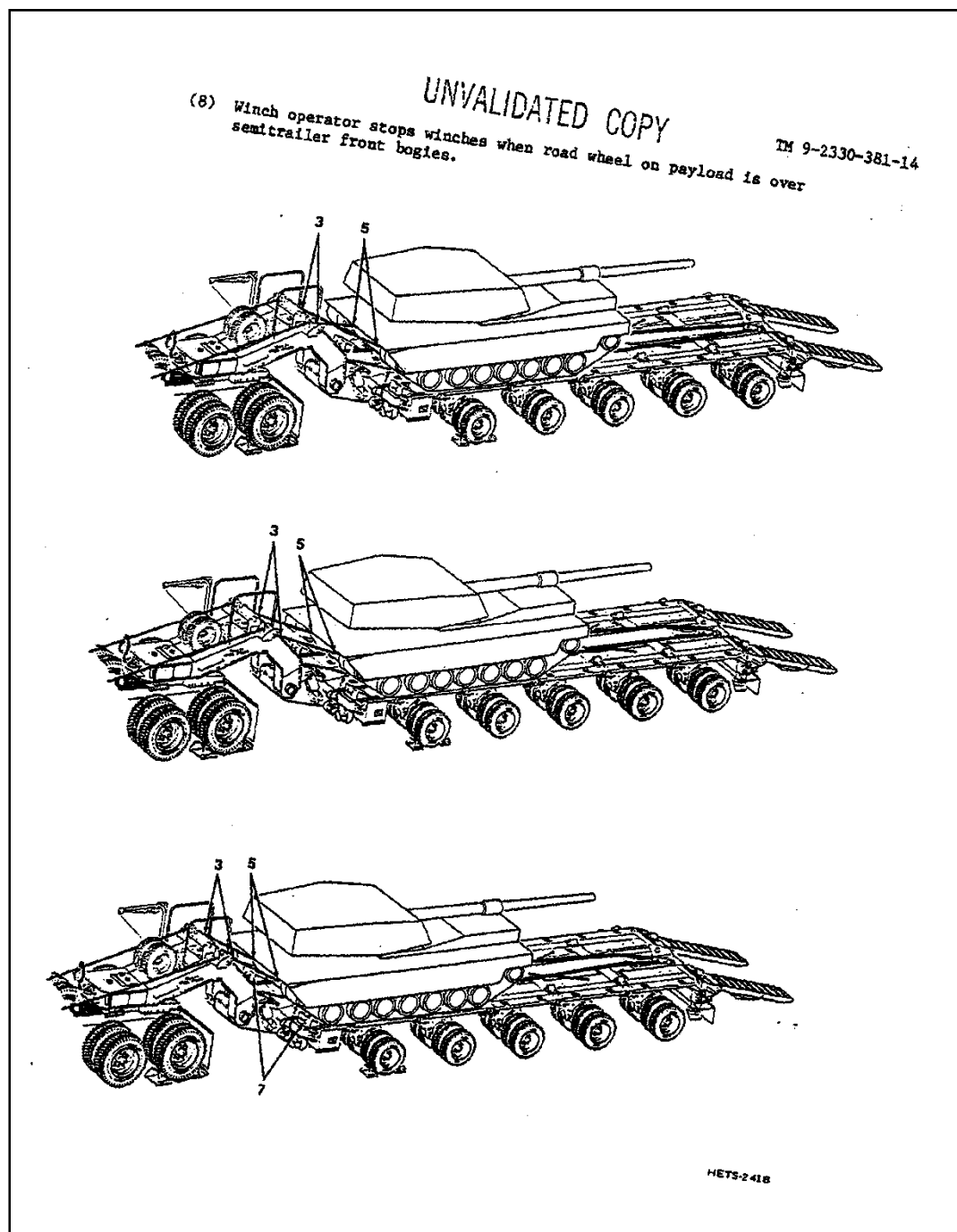


Figure 1. Technical manual procedure for performing task being interviewed (continued).

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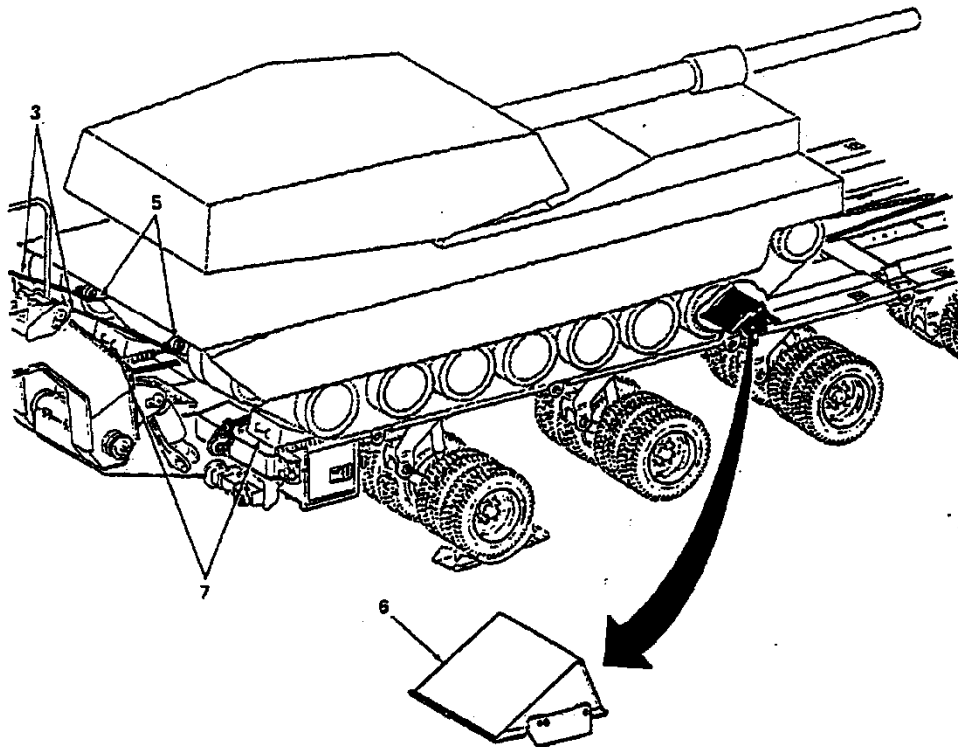
TM 9-2330-381-14

2-27. DUAL WINCH LOADING/UNLOADING (CONT)

WARNING

DO NOT disconnect winch cables until platform is level and payload is chocked or personal injury may result.

- (9) Chock rear of payload using two rear payload chocks (6). Level platform (para. 2-19).
- (10) Remove winch cables (3) from payload upper recovery eyes (5). Uncross winch cables (3) and reconnect cables for a straight pull.
- (11) Winch operator continues winching until payload makes firm contact with front payload chocks (7). Keep tension on payload until payload can be chocked.
- (12) To secure payload, perform steps (28) thru (37) of paragraph 2-26a.
- (13) Restow winch cables and winching materials.



2.3.3 Use of Model 2 for MANPRINT Evaluation of the Enhanced Position Location Reporting System (EPLRS)

Model 2 was also employed for MANPRINT Evaluation of the Enhanced Position Location Reporting System (EPLRS) IOTE (see footnote c, table 3, page 11). The model appeared to work reasonably well with General Purpose User (GPU) soldiers with varying levels of verbal skill.

2.3.3.1 Resources Used for MANPRINT Evaluation of EPLRS. Players in this test included about 200 soldiers with a variety of MOSs and skill levels. The test was conducted in three phases during a period of one month. MANPRINT support was provided by a GS-12 Manager and three GS 5 TEMPS—one of whom was experienced in supporting MANPRINT evaluations for other systems under tests. She served as the “in the field” data manager who provided day to day direction to other TEMPS and guidance to four military data collectors. The MANPRINT Manager developed the Data Collection Plan, designed the data collection instruments and coordinated with Test Management Team to assure that agreed upon arrangement for data collection remained in place. The GS 5s and supporting military collected and processed the data and provided the raw data and frequency tabulations to the MANPRINT Manager.

2.3.3.2 Data Collection Procedures for MANPRINT Evaluation of EPLRS. In contrast to the HETS test where there were only about 50 soldier participants and a long test window (6 months), the EPLRS test involved about 200 soldier participants for a 30-day test. Consequently interviews had to be more targeted to those soldiers who had problems on specific tasks. All participating soldiers completed one of seven forms like that shown on page 97—containing different sets of tasks for the different operator types. In each case they checked those critical tasks on which they experienced one or more problems—and for which more detailed MANPRINT data appeared necessary. The second part of this data collection effort (see page 98) involved use of an a MANPRINT Evaluation form that contained interview questions paralleling those used for the HETS operators' and maintainers' interviews (see page 15). Appendix J provides a slightly different version of the MANPRINT Biographical Questionnaire used for this system evaluation that includes additional biographical information and addresses potentially important social attitudinal factors.

Part 1

MANPRINT DEBRIEF FOR NCS OPERATORS

BIO/BACKGROUND/POSITION

Name _____ PIN No. _____ Date _____
Mo/Da/Yr

Please circle:

Test Phase: Pilot Stand-alone Integrated

MOPP: 0 1 2 3 4

INSTRUCTIONS

RESPOND FOR EACH TASK:

1. Circle Y in PROBLEM column if completion of the task created a performance problem for you since you last completed this form.

IF TEST PHASE IS PILOT, CIRCLE Y FOR PROBLEMS WHICH OCCURRED ONLY AFTER PILOT PHASE BEGAN

2. For those cases where you circled Y in the PROBLEM column, if you believe your problem was caused by a training deficiency, circle Y in the TRAINING column.

Task No.	Task Name	Problem	Training Related
1	List History, Need, Purpose and Key Concepts of EPLRS	Y	Y
2	List Major EPLRS Assemblies and Match Purpose of Each	Y	Y
3	List NCS Controls and Indicators and Match Purpose of Each	Y	Y
4	List EPLRS Safety, ESD and Security Requirement	Y	Y
5	Perform System Power-On Procedure	Y	Y
6	Perform Key Load Operations	Y	Y
7	Perform Program Load Procedures	Y	Y
8	Perform Initialization Procedures	Y	Y
9	Perform System Power-Down Procedure	Y	Y
10	Enter, Update, Delete and Record Library Data	Y	Y
11	Enter, Update, Delete and Record Map Data	Y	Y
12	Perform Basic Operator Control Switch Actions	Y	Y
13	Perform Map Tape Building/Updating Switch Actions	Y	Y
14	Perform Display Manipulation Switch Actions	Y	Y
15	Perform Map Scale/Offset Switch Actions	Y	Y
16	Enter System Configuration Parameters	Y	Y
17	Resolve Alerts Advisory	Y	Y

Part 2

MANPRINT ASSESSMENT

BIO/BACKGROUND/POSITION

Name _____ PIN No. _____ Date _____ Time _____
Mo/Da/Yr 0000-2400

Please circle:

Position: NCS Oper RS Oper NCS Maint RS Maint EGRU/Gateway Oper ETS DS Maint SYSCON

Test Phase: ETE Pilot Stand-alone Integrated

MOPP: 0 1 2 3 4

PROBLEM DESCRIPTION

1. Task Performing (use task no. from Critical Task List when possible):

2. Problem Description:

3. Most probable problem cause (circle one):

a. Equipment malfunction (appears unrelated to any soldier action)

b. Training

1) Poor or inadequate classroom training on task

2) Lack of sustainment/collective training on task

c. Manpower (not enough soldiers to do job involving this task)

d. Personnel (task is outside “normal” duties for my MOS or skill level)

e. Health Hazard (task jeopardized my or another crew member's safety)

f. System Safety (task performed created a safety problem related to EPLRS equipment)

g. Human Factors

1) Problem working with EPLRS equipment/hardware--difficult or complicated
to work with or access when this task was performed

2) Problem with EPLRS software when this task was performed

4. Problem reported previously: YES NO (circle)

If YES, go to item 9; otherwise continue with item 5.

5. Frequency this task was performed since class instruction--BEFORE PILOT TEST BEGAN (use number from following scale) _____

1 = at least once daily 2 = once or twice a week 3 = at least every two weeks	4 = at least once a month 5 = not at all
---	---

6. TM error contributed to this problem: YES NO (circle)

If YES indicate: a) TMno. b) page/para or Figure c) error description

a) TM No. _____

b) _____

c) _____

7. Problem Frequency/Severity (when task is being performed):	
<u>Frequency</u> (circle letter indicating judgment)	<u>Severity</u> (circle Roman numeral indicating judgment)
a. Frequent - continuously experienced	I Catastrophic - death or system's loss
b. Probable - will occur frequently	II Critical - severe injury or major system damage
c. Occasional - will occur several times	III Marginal - minor injury or system damage
d. Remote - unlikely, but possible	IV Negligible - less than minor injury or system damage
e. Improbable - very unlikely to occur	

8. Job Stress (when task is being performed):	
<p>a) TIME STRESS - Task must be performed <u>at</u> or nearly at same time as other tasks.</p> <p><u>Circle No.</u></p> <p>1 = <u>No</u> overlap</p> <p>2 = <u>Little</u> overlap</p> <p>3 = <u>Occasional</u> overlap</p> <p>4 = <u>Frequent</u> overlap</p> <p>5 = <u>Very frequent</u> overlap</p> <p>If 4 or 5, which other tasks (use nos. from Critical Task List, if possible) _____</p>	<p>b) MENTAL STRESS - Task completion requires conscious mental effort (concentration)</p> <p><u>Circle No.</u></p> <p>1 = None needed</p> <p>2 = Little needed</p> <p>3 = Moderate amount needed</p> <p>4 = Extensive amount needed</p> <p>If 3 or 4, indicate why:</p> <p>_____</p> <p>_____</p>
<p>c) PHYSICAL STRESS - Task completion requires physical effort.</p> <p><u>Circle No.</u></p> <p>1 = No demand</p> <p>2 = Little demand</p> <p>3 = Moderate demand</p> <p>4 = Heavy demand</p> <p>5 = Very heavy demand</p> <p>If 4 or 5, indicate why:</p> <p>_____</p>	<p>d) PSYCHOLOGICAL STRESS - Task completion causes <u>confusion</u>, <u>frustration</u>, or <u>anxiety</u>.</p> <p><u>Circle No.</u></p> <p>1 = None</p> <p>2 = Little</p> <p>3 = Moderate</p> <p>4 = High</p> <p>5 = Intense</p> <p>If 4 or 5, indicate why:</p> <p>_____</p>

9. Mission successfully performed (even with problem): YES NO (circle)

10. Fix (procedure/task modification needed to complete mission): YES NOT (circle)

11. Recommended fix (if any) (continue on back side, if necessary): _____

On-Site Data Collector

PIN

MANPRINT Data Collector

PIN

2.3.4 Use of Model 3 for MANPRINT Evaluation of ASAS in the War Fighting Rapid Acquisition Program (WRAP)

This evaluation involved ten different types of ASAS functions with no well defined critical task lists that could be compiled within the short response time available. Whereas some tests are designed primarily to provide opportunity for evaluation—with any training function being afforded as secondary in purpose—this effort was designed primarily as a training exercise with an evaluation function being superimposed (and secondary) on the behaviors exhibited during that training.

2.3.4.1 Resources Used for MANPRINT Evaluation of ASAS during a WRAP. This training exercise was conducted as a three day activity in which only one data collection resource was available to provide MANPRINT Evaluation for soldiers performing in the ASAS functionality. Contributing to the uniqueness of the methodology employed in this evaluation was its use to obtain quality MANPRINT data when the effort required a quick turn-around activity. Support for this assessment began on Veteran's Day in 1997. One of the Fort Hood Field Element personnel was tasked to coordinate the evaluation effort that involved several MANPRINT Analysts, but generally only one per Battle Field Functional Area (BFA). Some of these Analysts came from U.S. Army Research Laboratory Headquarters and some from other Field Elements. The author was contacted at about 10 a.m. and asked if he could support this effort to collect MANPRINT data for ASAS. With about three hours to plan how this support could be provided, it was very relevant to ask what kind of meaningful and potentially useful MANPRINT Evaluation could be accomplished with so little time for preparation.

2.3.4.2 Data Collection Procedures for MANPRINT Evaluation of ASAS during a WRAP. An interview protocol containing generic MANPRINT questions (see table 8) was the basic data collection instrument used during the WRAP for ASAS. With the soldier sitting alongside the MANPRINT Analyst, each MANPRINT question was read to the soldier, first, to determine whether there was any likely MANPRINT problem. For those questions where possible problems did exist, the Analyst asked for description of the problem(s) and continued with follow-up questions until a relatively complete understanding of the problem existed. Soldiers were then asked for their recommendations on how the problem(s) could be corrected and the consequences likely if the problem(s) was (were not) fixed. Data analysis involved tabulating reported problems by MANPRINT domain, the recommended procedures for correction and the consequences of not fixing the problem. This instrument has proven to be a useful quick evaluation instrument on several occasions for collecting MANPRINT data and especially useful when you don't know very much about the system. For example, when table 8 is used to support MANPRINT Evaluation for the SMART-T in the FOTE, generally “SMART-T” was substituted for ASAS throughout.

Table 8. MANPRINT interview questions used during WRAP for ASAS.

During Your Mission, Did You ... (Repeat For Each Item Below):	N Y	MANPRINT Domain Addressed
1. See any task or operation which jeopardized your safety or that of any other crewmember?	N Y	Health Hazard
2. Note any safety problem (actual or potential) that would degrade (or damage) equipment, configurations, procedures or work conditions?	N Y	System Safety
3. Experience or suspect any condition associated with Operating the ASAS which you consider unhealthy?	N Y	Health Hazards
4. Or any other crew member receive any injury related to the ASAS operations?	N Y	Health Hazard
5. Need to perform any task or operation for which you were not trained?	N Y	Training
6. Perform any task or operation for which your training was poor or inadequate?	N Y	Training
7. Note any crew/collective task degraded because instruction was poor or tasks taught incompletely?	N Y	Training
8. Feel that your or your crew's performance was degraded or "held-down" by any training shortfall?	N Y	Training
9. Perform any task or operation that in your judgment required an additional crew member (or more time than allowed for you to do alone)?	N Y	Manpower
10. Need to work harder with ASAS to augment MI assessment than with manual MI procedures?	N Y	Manpower
11. Perform any task or operation that was outside of "normal" duties for your MOS and skill level?	N Y	Personnel
12. Note any ASAS equipment/hardware that was unnecessarily difficult, complicated, or "unfriendly" to work with?	N Y	Human Factors Engineering: Hardware
13. Experience any problem associated with ASAS software at your crew station?	N Y	Human Factors Engineering: Software
14. Identify any ASAS equipment/hardware placement which kept you or your crew from "maxing out"?	N Y	Human Factors Engineering: Hardware
15. Note any ASAS equipment/hardware placement which made access or use difficult?	N Y	Human Factors Engineering: Hardware
16. Note any ASAS-related procedures which were unnecessarily difficult, complicated, or "unfriendly"?	N Y	Human Factors Engineering: Procedures
17. Identify any "dumb" things the ASAS required you to do?	N Y	Human Factors Engineering: Procedures

2.3.5 Use of Model 4 for MANPRINT Evaluation of the Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T) in the FOTE

In another case, it was necessary for a second MANPRINT Analyst to replace the assigned MANPRINT Analyst after the Pilot Test for a Follow-on Operational Tests and Evaluation (FOTE) of the SMART-T. The first time that this system was observed by the second Analyst was following the Pilot Test of the FOTE as it was deployed in the field.

2.3.5.1 Resources Used for MANPRINT Evaluation of the SMART-T in the FOTE. In this test, there were about 30 soldiers who participated as operators; system operation was conducted over a three day period, 24 hr per day. The MANPRINT Analyst reviewed and modified the data collection plans and instruments used planned for use in the MANPRINT evaluation; ~20 of the 30 participating soldiers were interviewed with the instrument shown in table 8 and data were analyzed and a report of findings was prepared for the Test Officer (15).

2.3.5.2 Data Collection Procedures for MANPRINT Evaluation of the SMART-T. The interview instrument (see table 8) was used in a manner very similar to its use in the ASAS MANPRINT Evaluation during the WRAP (see paragraph 2.3.4.2). Other group-oriented MANPRINT evaluation instruments were administered to test players by other test personal and results were provided to the MANPRINT Analyst for analysis and summarization.

2.3.6 Use of Model 4 for MANPRINT Evaluation of the M1A2 in the IOTE

Soldiers participating in this test were relatively “low” in verbal skills and a usable list of critical tasks did not appear available.

2.3.6.1 Resources Used for MANPRINT Evaluation of the M1A2. In the M1A2 IOTE, there were about 80 armor MOSs. Supporting this effort were a GS13 (MGR) who developed the data collection plan, designed the data collection instruments and supervised the collection and processing of data; participating in the data collection and analysis were a senior retired NCO with system experience and four retired NCOs who also had system experience served as Temps.

2.3.6.2 Data Collection Procedures for MANPRINT Evaluation of the M1A2. This data collection procedure included use of an MANPRINT Interview Schedule comparable to that used in Model 3 (table 8). In implementing this model, there was an attempt to validate the reported problem, to acquire a Risk Assessment for Health Hazards and System Safety (page 104) and preparation of a MANPRINT Problem/Suggestion Report (page 105). In completion of this latter form, the problems reported were characterized by Type (MANPRINT domains) and Mission Impact; data collection was designed to describe problems and included opportunity to acquire suggestions for remediation.

SME/DATA COLLECTOR VALIDATION INSTRUCTIONS

Review the description of the MANPRINT problem.

Attempt to validate this problem through one of the following means.

- Someone else who may have knowledge of problem
- Interview the operator/RAM data collector/performance data collector who wrote the MPR
- Review video tape of problem

After you have located one of the above sources and verified the problem, ask the following questions and record answers on the MPR.

1. What were the contributing causes to the problem?
2. What are the likely consequences if the problem is not fixed?
3. What are the solutions to this problem?

Remember to complete the MPR by doing the following:

Mark the space on the MPR showing how you validated the problem.

Be certain to fill in your evaluation of the Type and Impact of the problem.

Use the Safety Hazard and Hazard Probability scales to determine Safety Category and Probability codes at the bottom of the MANPRINT Problem/Suggestion Report.

SAFETY HAZARD CATEGORY

Catastrophic	I	Death or system loss
Critical	II	Severe injury or major system damage
Marginal	III	Minor injury or system damage
Negligible	IV	Less than minor injury or system damage

HAZARD PROBABILITY CATEGORIES

<u>Description</u>	<u>Level</u>	<u>Specific Individual Item</u>	<u>Inventory</u>
Frequent	A	Likely to occur frequently	Continuously experienced
Probable	B	Will occur several times in life of an item	Will occur frequently
Occasional	C	Likely to occur sometime in life of an item	Will occur several times
Remote	D	Unlikely, but possible to occur in life of item	Unlikely, but can reasonably be expected to occur
Improbable	E	So unlikely, it can be assumed as not occurring	Unlikely to occur, but possible may not be experienced

MANPRINT Log No. _____

M1A2 BLOCK II IOTE: MANPRINT PROBLEM/SUGGESTION REPORT

Operator: _____ Rank: _____ Date: _____

Data Collector: _____ PIN No. _____

Bumper No.: _____ Vehicle SN: _____

INSTRUCTIONS: As you work with the M1A2, you may notice or experience a problem or have a suggestion for improving the system. For any problem or incident you encounter, indicate the time it occurred and describe it clearly. Using the scales below, indicate the type of problem and its impact on the mission. Simply describe suggestions. To list more than one problem or suggestion, draw a line across the page after each complete entry.

Type	Mission Impact
E = Equipment (hardware) C = Computer software T = Training (no/inadequate) S = Safety/Health Hazard* W = Workload/Manpower O = Operator (mistake/memory)	S = Severe (probable failure) Mo = Moderate (probably degrading) Mi = Minimal (mainly attitudinal) N = Negligible (essentially none)

TIME	DESCRIPTION	TYPE	IMPACT
	<p>SHORT TITLE:</p> <p>SME Badge No. _____</p>		

MPT Team O None O Observed O Op Interview O SME O Video
 VALIDATION O Invalid O Valid-→ Type Code _____ Impact Code _____
 * Safety Category _____ Probability _____

DAG Approval _____ DTG _____

3. Conclusions

The purpose of this report has been to identify alternative procedures for conducting MANPRINT evaluations. After characterization of the areas (domains) addressed by MANPRINT, models for evaluation were discussed. For each of the models, procedures for implementing MANPRINT evaluations were illustrated by presentation of different data collection instruments. The appendices contain additional forms and some detailed procedures about how those data are used—specifically for the Personnel, Health Hazards, and System Safety domains.

4. References

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**Appendix A. Memorandum for Defense Manpower Data Center (DMDC) to
Support Sample Representativeness Comparisons**

This appendix appears in its original form, without editorial change.

14 May 1999

MEMORANDUM FOR DEFENSE MANPOWER DATA CENTER (DMDC), DOD CENTER,
 MONTEREY BAY, ATTN: , 400 GIGLING
 ROAD, SEASIDE, CA 93955-6771

SUBJECT: Request for ASVAB and Related Data

1. Per recent FONECON with about expected SUBJECT request, paragraphs 2-6 detail the current request being made. As this request is very similar to a recent effort completed by DMDC Analyst (insert name), you may wish to assign this current effort to him.
2. For all soldiers on the enclosed floppy¹, please provide individual scores and group mean and standard deviation for each of the listed variables (except as noted):

Date of Birth—YR	(no mean or standard deviation)
Date of Birth—MO	(no mean or standard deviation)
Date of Birth—DAY	(no mean or standard deviation)
Sex (Gender)	(no mean or standard deviation)
Race Ethnic	(no mean or standard deviation)
Paygrade	(no mean or standard deviation)
Education	(variable in column 11 on Active Duty Military Master and Loss Edit file)
	(no mean or standard deviation)
Highest Year Education	(variable in column 24 of the Active Duty...file)
	(no mean or standard deviation)
Date of Entry—YR	(no mean or standard deviation)
Date of Entry—MO	(no mean or standard deviation)
Date of Entry—DAY	(no mean or standard deviation)
AFQT Test Group	(no mean or standard deviation)
AFQT Percentile	
Standardized Subtest Scores	
GS	AR
WK	PC
NO	CS
AS	MK
MC	EI
VE	
Army ASVAB Composites	
GT	GM
EL	CL
MM	SC
CO	FA
OF	ST

¹ Enclosed floppy contains data for three commissioned officers. It is understood that no AFQT and ASVAB Scaled Subtests or Composites will exist for those soldiers.

3. For all Active duty soldiers (Army) holding MOS 96B, please provide N (population size), means and standard deviation of:

Age (use Date of Birth on file and 1 Mar 99 as current date in computation)
Time in Service (use Date of Entry on file and 1 Mar 99 as current date in computation)
AFQT Percentile
All Standardized Subtest Scores (referenced in para 2 above)
All Army ASVAB Composites (referenced in para 2 above)

4. For all Active duty soldiers (Army) holding MOS 96B, please provide frequency distributions for:

Paygrade
Sex (Gender)
Race Ethnic
AFQT Test Group
Education with categories' definitions
Highest Year of Education with categories' definitions

5. For all Active duty commissioned officers holding a 35D MOS, please provide, by rank (paygrade), N (population size) and frequency distributions for:

Sex (Gender)
Race Ethnic
Education (variable in column 11 on the Active Duty...file)
Highest Year of Education (variable in column 24 of the Active Duty...file)
Paygrade

6. For all Active duty commissioned officers holding a 35D MOS, please provide, by rank (paygrade), N (population size) and mean and standard deviations of

Age (use Date of Birth and 1 Mar 99 as current date in computation)
Time in Service (use Date of Entry on file and 1 Mar 99 as current date in computation)

7. File on floppy has been created with MS Word and saved in two forms: a) Text and b) Rich Text format. Please direct any questions concerning this request to Dr. Otto Heuckeroth, DSN 738-9377/9572, commercial (254) 288-9377/9572.

8. Please forward all output to:

Army Research Laboratory
ATTN: AMSRL-HR-MV (Dr. Heuckeroth)
HQ TEXCOM
91012 Station Ave
Fort Hood, TX 76544-5073

Fax, if convenient, to DSN 738-1691, commercial (254) 288-1691.

OTTO H. HEUCKEROTH
Research Psychologist

Encl
Floppy disk (flat file)
95-OT-1140A

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Appendix B. Sample Representativeness of Soldiers Participating in the March 1999 DT/OT RWS LUTE

This appendix appears in its original form, without editorial change.

Sample Representativeness of Soldiers Participating in the March 1999 DT/OT RWS LUTE

INTRODUCTION

Between 16 and 19 March 1999, enlisted soldiers holding an MOS 96B from the 3rd BDE of the 1st CD and B Co. of the 104th MI BN participated in a Tester controlled DT/OT event. In addition to these 10 enlisted soldiers, these three commissioned officers--a MAJ and a 1LT from the 3rd BDE of the 1st Co. and one 2LT from B Co. of the 104th MI BN.

METHOD

In addition to the 14 instruments used by ARL to facilitate the MANPRINT assessment--from individual RWS task classroom training assessment through the MANPRINT assessment during the Record test--data on selected demographic and Armed Services Vocational Aptitude Battery (ASVAB) data were obtained for enlisted personnel; only selected demographic data were obtained for the participating commissioned officers.³ Variables used to make sample representativeness comparisons for the enlisted soldiers include: 1) Each of the 11 ASVAB Standardized Subtest Scores; 2) Armed Force Qualification Test (AFQT) percentile; 3) Each of the 10 ASVAB Composites; 4) Age; 5) Time in Service; 6) Gender; 7) Race/Ethnicity and 8) Education. Variables used to make sample representativeness judgments about participating commissioned officers include: 1) Gender; 2) Race/Ethnicity; 3) Education; 4) Time in Service; and 5) Age. Coordination with DMDC indicated that Composite scores in the Active Duty File were suspect in part, due to file formatting problems. In some cases, some Subtest Scores, from which Composites were computed, were missing; these records were deleted in the descriptive statistics presented for comparisons involving Composites. Finally, Composite data for Active Duty soldiers who entered the service prior to 1981 were not normalized such that they are comparable to ASVAB Composites data computed after 1980. For every Composite of about 500 Active Duty soldiers in the pre '81 aggregate population (MOS 96B, 96D, 98C), the mean normalized Composites are smaller and variances larger than those for comparable Active Duty soldiers taking the ASVAB after 1980. To reduce ambiguity in interpretation, only the Composites for that portion of the aggregate Active Duty population who took the ASVAB after 1980 are reported in Table 1.

RESULTS AND DISCUSSION

Sample Representativeness Comparisons for Enlisted MOS 96B Soldiers Participating in the RWS Enclave During the March 1999 DT/OT LUTE.

Table 1 provides the means and standard deviations of ASVAB Scaled Subtests, Composites and Armed Forces Qualification Test (AFQT) percentile for active duty soldiers holding MOS 96B; comparable data are provided for the 10 MOS 96B who participated as RWS Analysts during the DT/OT test in March 1999. Also included in this table are statistics and parameters for soldier time in service and age.

³The source of both ASVAB and the selected demographic characteristics was from the Defense Manpower Data Center (DMDC) MEPCOM and Active Duty files.

Table 1

Comparison of Mean and Variance of Armed Services Vocational Aptitude Battery (ASVAB) Scaled Subtests and Composites, and Age and Time In Service of the Population of Active Duty Enlisted Soldiers Holding MOS 96B and Analysts Operating Remote Work Stations (RWS) During the March 1999 DT/OT LUTE

	POPULATION OF ACTIVE DUTY SOLDIERS HOLDING MOS 96B, 96D OR 98C			PARTICIPANTS IN THE DECEMBER 1998 WFX SERVING AS RWS ANALYSTS			MEANS SIGNIFI- CANCE TESTING	VARIANC E SIGNIFI- CANCE TESTING
Variable	N	Mean	Std Dev	N	Mean	Std Dev	t Test	F
AFQTP	2406	72.22	15.78	10	80.50	13.99	1.66	1.27
GS	2991	56.43	6.55	10	58.60	8.33	0.82	1.62
AR	2991	56.08	6.77	10	59.40	5.93	1.77	1.30
WK	2991	55.69	5.34	10	56.30	4.92	0.39	1.18
PC	2991	55.56	5.10	10	57.10	6.23	0.78	1.49
NO	2991	55.35	6.47	10	54.30	5.72	0.58	1.28
CS	2991	54.52	7.56	10	57.30	6.11	1.44	1.53
AS	2991	51.80	7.95	10	49.50	9.58	0.76	1.45
MK	2991	57.31	7.15	10	62.90	3.21	5.46***	4.96***
MC	2991	55.87	7.46	10	58.70	3.68	2.41*	4.11**
EI	2991	53.38	7.42	10	50.50	10.01	0.91	1.82
VE	2991	55.38	5.64	10	57.00	5.21	0.98	1.17
GT	2400	113.55	9.54	10	117.90	10.09	1.44	1.12
GM	2400	112.04	11.18	10	112.50	15.25	0.13	1.86
EL	2406	114.10	10.54	10	117.80	12.02	1.11	1.30
CL	2400	114.93	9.78	10	121.30	7.86	2.06*	1.55
MM	2400	110.70	11.60	10	108.00	10.82	0.73	1.15
SC	2400	112.06	10.48	10	114.40	10.72	0.70	1.05
CO	2400	112.26	11.69	10	115.80	9.15	0.96	1.63
FA	2400	115.46	11.11	10	123.30	7.21	3.42***	2.37
OF	2400	112.55	9.69	10	112.10	8.08	0.15	1.44
ST	2400	116.01	9.52	10	121.40	8.26	1.79	1.33
TIME IN SERVICE	2406	77.40	58.44	10	45.00	50.40	1.75	1.34
AGE (yrs)	2406	27.13	5.99	10	25.57	6.58	0.82	1.21

*** $P \leq .01$

** $P \leq .025$

* $P \leq .05$

Tests for equality of variances were compared with F tests; comparisons of means were assessed by use of t tests. Comparison of soldier participants in the WFX LUTE with the population distributions of gender, race and education were assessed by comparison of observed and expected frequencies (see Tables 2 - 5). As the expected frequencies in at least one category were less than 5, χ^2 goodness-of-fit tests would be of questionable validity. "Inter-ocular" comparisons of observed and expected frequencies were performed.

Table 2

Observed and Expected Frequency of Enlisted Soldiers Participating as RWS Analysts During the March 1999 DT/OT LUTE by Categories of Gender

Number of Active Duty Soldiers (MOS 96B)	Expected Proportions	Observed and Expected Frequency of RWS Test Participants		Category of Gender
		Observed	Expected	
1932	.805	7	8.05	MALE
468	.195	3	1.95	FEMALE
2400		10		TOTAL

Table 3

Observed and Expected Frequency of Soldiers Participating as RWS Analysts During the March 1999 DT/OIT LUTE by Categories of Race

Number of Active Duty Soldiers (MOS 96B)	Expected Proportions	Observed and Expected Frequency of RWS Test Participants		Category of Race
		Observed	Expected	
1776	.740	8	7.4	WHITE
379	.158	1	1.58	BLACK
112	.047	1	.47	HISPANIC
133	.055	0	.55	OTHER
2400		10		TOTAL

Table 4

Observed and Expected Frequency of Enlisted Soldiers participating as RWS Analysts During the March 1999 DT/OT LUTE by Categories of Education

Number of Active Duty Soldiers (MOS 96B)	Expected Proportions	Observed and Expected Frequency of RWS Test Participants		Category of Education
		Observed	Expected	
2047	.853	6	8.53	HS Diploma or GED
79	.033	1	.33	2 Yrs College
59	.025	0	.25	3-4 Yrs College, No Diploma
183	.076	3	.76	College Degree (4 Yrs)
14	.006	0	.06	Masters Degree
1	.000	0	.00	Doctorate
17	.007	0	.07	Unknown
2400		10		Total

Sample Representativeness of MOS 35D Commissioned Officers Participating in the RWS Enclave During the March 1999 DT/OT LUTE.

As the RWS enclave contained only three 35D MOS officers--a male MAJ as S2, a female LT1 as AS2 and a female LT2 as ACT chief--statistical comparisons were not feasible. To make an assessment of sample representativeness for officers with such small sample sizes, comparisons on gender, race and education variables are made by comparing the model frequency of active duty commissioned officers--for the ranks participating in the test--with the category value of the test participant (see Tables 5-8). It is assumed that commissioned officers of each rank used in the test were assigned to enclave functionality positions consistent with established MI doctrine. For time in service and age variables, means and standard deviations for each participating Active Duty Rank is shown together with the relevant information for each rank participating in the March 1999 RWS DT/OT LUTE (see Table 8).

Table 5

Frequency of Active Duty Commissioned Officers Holding MOS 35D in March 1999 by Gender¹

Number of Active Duty Officers by Category	Rank of Commissioned Officers Participating in the TEST		
	2LT	1LT	MAJ
Males	193	533	634*
Females	105*	180*	86

¹Asterisks indicate the Gender of each MOS 35D test participant.

Table 6

Frequency of Active Duty Commissioned Officers Holding MOS 35D in March 1999 by Race/Ethnicity¹

Number of Active Duty Officers by Category	Rank of Commissioned Officers Participating in the TEST		
	2LT	1LT	MAJ
White	219*	548*	580*
Black	40	81	67
Hispanic	19	30	44
Other	20	47	23

¹Asterisks indicated the Race of each MOS 35D test participant.

Table 7

Frequency of Active Duty Commissioned Officers Holding MOS 35D in March 1999 by Education¹

Number of Active Duty Officers by Category	Rank of Commissioned Officers Participating in the TEST		
	2LT	1LT	MAJ
HS/GED	3	3	0
2 Yrs College	3	9	1
BS/BA	255*	605*	372*
MS/MA/1st Profn	6	25	337
Doctorate	0	0	1

¹Asterisks indicated the level of education attained by the Commissioned Officer at the indicated rank who participated in the March 1999 DT/OT LUTE.

Table 8

Summary Descriptive Statistics for Age and Time in Service for 2LTs, 1LTs and MAJs Holding MOS 35D¹

	2LT	1LT	MAJ
AGE			
N	298	710	719
Mean	25.98 (22.75)	27.11 (23.83)	38.08 (39.17)
Std Dev.	2.62	2.84	3.18
Time in Service			
N	298	713	720
Mean	2.46 (0.75)	4.31 (1.83)	14.80 (13.42)
Std Dev.	2.58	2.67	2.56

¹Number in parentheses is the Age and Time in Service of Commissioned Officers who participated in the march 1999 DT/OT LUTE.

CONCLUSIONS

Enlisted Soldier Participants

Compared to the population of Active Duty MOS 96B soldiers, test participants were significantly more homogeneous and had significantly higher aptitude scores for Mathematics Knowledge (MK) and Mechanical Comprehension (MC) Subtests compared to the population of Active Duty MOS 96B (see Table 1). Both of these Subtest raw scores are used to compute ASVAB Composites FA and ST. While the enlisted test participants also show the same significance pattern for the FA Composite, differences for the ST Composite--a Composite for which entry into MOS 96B is set at 105 as a minimum (AR 611-201)--while in the same direction, are not significant. In addition, mean CL aptitude is significantly greater for MOS 96B for test participants than for the population from which they were selected. These differences might, in part, be attributed to the fact that enlisted MOS 96B test participants were slightly more educated (see Table 4) than the population from which they were selected. No marked differences in gender (Table 2) or Race (Table 3) distributions were noted. These findings together with the observation that the differences for many of the other Subtests that the enlisted MOS 96B test participants are slightly superior in aptitude and education compared to target audience population from which they were selected. Had these differences not existed, it is this analyst's judgment that the training (need to integrate conceptual MOS TTPs training with training on use of automated software) and software problems exhibited would have been even more severe. With modification in the training (as recommended) and correction of software problems, it is this analyst's judgment that with a more representative set of enlisted participants the automated RWS function would be demonstrated as effective and suitable, i.e., the slight lack of sample representativeness is much less important to the overall system evaluation than the training deficiencies and HFE (software) problems evidenced.

Commissioned Officers Participants

Apart from the fact that the Assistant S2 (AS2) and ACT Chief were younger and with less experience than the population of MOS 35D commissioned officers from which they were selected, no concern about representativeness is evident. Both AS2 and the ACT Chief appeared quite competent and seemed to work well with the S2 and enlisted analysts. As with the enlisted analysts test participants, any slight unrepresentativeness noted is much less important to the evaluation assessment than addressing training deficiencies and correcting software problems evidenced.

Appendix C. Human Factors Engineering Questionnaire for an Electronic Equipment Test Facility (EETF)

This appendix appears in its original form, without editorial change.

HUMAN FACTORS QUESTIONNAIRE

ELECTRONIC TEST FACILITY OPERATOR (35C20)

NAME_____

DATE_____

The purpose of the following questionnaire is to obtain your opinions and observations about the adequacy of the AN/MSM 105 Electronic Test Facility from an operator's point of view. Take as much time as you feel is necessary to accurately complete the questionnaire. The administrator will answer any questions you have.

I. ENVIRONMENT

A. Using the scale to the right indicate with a check mark (✓) to indicate the adequacy of the following environmental conditions in the ETF:

Completely Adequate

Mostly Adequate

Borderline

Mostly Inadequate

Completely Inadequate

1. Temperature

2. Ventilation

3. Noise

4. Vibration

5. Illumination

B. Explanation of Borderline, Mostly Inadequate and Completely Inadequate responses

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are approximately 20 lines visible. The paper has a slight shadow on the right side, suggesting it's resting on a surface.

II. EQUIPMENT CHARACTERISTICS

A. VIDEO DISPLAY UNIT

Using the scale to the right indicate with a check mark (✓) to indicate the adequacy of the following environmental conditions in the ETF:

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
1. DISPLAY					
a. Display brightness	—	—	—	—	—
b. Absence of glare	—	—	—	—	—
c. Absence of flicker	—	—	—	—	—
d. Letter discrimination	—	—	—	—	—
e. Viewing distance	—	—	—	—	—
f. Angle of view	—	—	—	—	—
g. Location of display	—	—	—	—	—
h. Other (specify)_____	—	—	—	—	—
2. INDICATOR PANEL					
a. Display brightness	—	—	—	—	—
b. Absence of glare	—	—	—	—	—
c. Absence of flicker	—	—	—	—	—
d. Viewing distance	—	—	—	—	—
e. Angle of view	—	—	—	—	—
f. Correct labels	—	—	—	—	—
g. Location of indicators	—	—	—	—	—
h. Other (specify)_____	—	—	—	—	—

3. KEYBOARD AND CONTROLS	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
a. Size	—	—	—	—	—
b. Shape	—	—	—	—	—
c. Spacing between controls	—	—	—	—	—
d. Resistance (too easy to turn or push, or too hard to turn or push)	—	—	—	—	—
e. Correct/Complete labels	—	—	—	—	—
f. Understandable labels	—	—	—	—	—
g. Size of labels	—	—	—	—	—
h. Location of labels	—	—	—	—	—
i. Absence of unrelated or confusing markings	—	—	—	—	—
j. Visibility of controls	—	—	—	—	—
k. Angle of view	—	—	—	—	—
l. Location of <u>critical</u> controls	—	—	—	—	—
m. Reach distance of <u>critical</u> controls	—	—	—	—	—
n. Location of <u>non-critical</u> controls	—	—	—	—	—
o. Reach distance of <u>non-critical</u> controls	—	—	—	—	—
p. Functional grouping (controls with related functions are grouped together)	—	—	—	—	—

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
q. Control type (type of control is appropriate for type of function)	—	—	—	—	—
r. Other (specify)_____	—	—	—	—	—

B. Explanation of Borderline, Mostly Inadequate and Completely Inadequate responses

B. LINE PRINTER

Using the scale to the right indicate with a check mark (✓) to indicate the adequacy of the following environmental conditions in the ETF:

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
1. INDICATOR LIGHTS					
a. Brightness	—	—	—	—	—
b. Absence of glare	—	—	—	—	—
c. Absence of flicker	—	—	—	—	—
d. Viewing distance	—	—	—	—	—
e. Angle of view	—	—	—	—	—
f. Correct labels	—	—	—	—	—
g. Location of indicators	—	—	—	—	—
h. Indicators inform you of what you need to know	—	—	—	—	—

(1) in a timely manner	—	—	—	—	—
(2) with enough precision	—	—	—	—	—
(3) with relevant information	—	—	—	—	—
i. Other (specify) _____	—	—	—	—	—

2. CONTROLS					
a. Size	—	—	—	—	—
b. Shape	—	—	—	—	—
c. Spacing between controls	—	—	—	—	—
d. Resistance (too easy to turn or push, or too hard to turn or push)	—	—	—	—	—

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
e. Correct/Complete labels	—	—	—	—	—
f. Understandable labels	—	—	—	—	—
g. Size of labels	—	—	—	—	—
h. Location of labels	—	—	—	—	—
i. Absence of unrelated or confusing markings	—	—	—	—	—
j. Visibility of controls	—	—	—	—	—
k. Angle of view	—	—	—	—	—
l. Location of <u>critical</u> controls	—	—	—	—	—
m. Reach distance of <u>critical</u> controls	—	—	—	—	—
n. Location of <u>non-critical</u> controls	—	—	—	—	—
o. Reach distance of <u>non-critical</u> controls	—	—	—	—	—
p. Functional grouping (controls with related functions are grouped together)	—	—	—	—	—
q. Control type (type of control is appropriate for type of function)	—	—	—	—	—
r. Other (Specify)_____	—	—	—	—	—

[illegible]

C. CONTROL STATION

Using the scale to the right indicate with a check mark (✓) to indicate the adequacy of the following environmental conditions in the ETF:

1. COUNTERS AND INDICATORS

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
a. Brightness	—	—	—	—	—
b. Absence of glare	—	—	—	—	—
c. Absence of flicker	—	—	—	—	—
d. Viewing distance	—	—	—	—	—
e. Angle of view	—	—	—	—	—
f. Correct labels	—	—	—	—	—
g. Location of indicators	—	—	—	—	—
h. Counters and Indicators inform you of what you need to know	—	—	—	—	—
(1) in a timely manner	—	—	—	—	—
(2) with enough precision	—	—	—	—	—
(3) with relevant information	—	—	—	—	—
i. Other (specify) _____	—	—	—	—	—

2. CONTROLS

a. Size	—	—	—	—	—
b. Shape	—	—	—	—	—
c. Spacing between controls	—	—	—	—	—
d. Resistance (too easy to turn or push, or too hard to turn or push)	—	—	—	—	—

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
e. Correct/Complete labels	—	—	—	—	—
f. Understandable labels	—	—	—	—	—
g. Size of labels	—	—	—	—	—
h. Location of labels	—	—	—	—	—
i. Absence of unrelated or confusing markings	—	—	—	—	—
j. Visibility of controls	—	—	—	—	—
k. Angle of view	—	—	—	—	—
l. Location of <u>critical</u> controls	—	—	—	—	—
m. Reach distance of <u>critical</u> controls	—	—	—	—	—
n. Location of <u>non-critical</u> controls	—	—	—	—	—
o. Reach distance of <u>non-critical</u> controls	—	—	—	—	—
p. Functional grouping (controls with related functions are grouped together)	—	—	—	—	—
q. Control type (type of control is appropriate for type of function)	—	—	—	—	—
r. Other (Specify)_____	—	—	—	—	—

[illegible]

D. DC POWER STATION

Using the scale to the right indicate with a check mark (✓) to indicate the adequacy of the following environmental conditions in the ETF:

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
1. METERS AND INDICATORS					
a. Brightness	—	—	—	—	—
b. Absence of glare	—	—	—	—	—
c. Absence of flicker	—	—	—	—	—
d. Viewing distance	—	—	—	—	—
e. Angle of view	—	—	—	—	—
f. Correct labels	—	—	—	—	—
g. Location of meters and indicators	—	—	—	—	—
h. Meters and Indicators inform you of what you need to know	—	—	—	—	—
(1) in a timely manner	—	—	—	—	—
(2) with enough precision	—	—	—	—	—
(3) with relevant information	—	—	—	—	—
i. Other (specify) _____	—	—	—	—	—
2. CONTROLS					
a. Size	—	—	—	—	—
b. Shape	—	—	—	—	—
c. Spacing between controls	—	—	—	—	—
d. Resistance (too easy to turn or push, or too hard to turn or push)	—	—	—	—	—
e. Correct/Complete labels	—	—	—	—	—

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
f. Understandable labels	—	—	—	—	—
g. Size of labels	—	—	—	—	—
h. Location of labels	—	—	—	—	—
i. Absence of unrelated or confusing markings	—	—	—	—	—
j. Visibility of controls	—	—	—	—	—
k. Angle of view	—	—	—	—	—
l. Location of <u>critical</u> controls	—	—	—	—	—
m. Reach distance of <u>critical</u> controls	—	—	—	—	—
n. Location of <u>non-critical</u> controls	—	—	—	—	—
o. Reach distance of <u>non-critical</u> controls	—	—	—	—	—
p. Functional grouping (controls with related functions are grouped together)	—	—	—	—	—
q. Control type (type of control is appropriate for type of function)	—	—	—	—	—
r. Other (Specify)_____	—	—	—	—	—
_____	—	—	—	—	—

[illegible]

E. TAPE STATION

Using the scale to the right indicate with a check mark (✓) to indicate the adequacy of the following environmental conditions in the ETF:

1. INDICATOR LIGHTS

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
a. Brightness	—	—	—	—	—
b. Absence of glare	—	—	—	—	—
c. Absence of flicker	—	—	—	—	—
d. Viewing distance	—	—	—	—	—
e. Angle of view	—	—	—	—	—
f. Correct labels	—	—	—	—	—
g. Location of indicators	—	—	—	—	—
h. Indicators inform you of what you need to know	—	—	—	—	—

(1) in a timely manner	—	—	—	—	—
(2) with enough precision	—	—	—	—	—
(3) with relevant information	—	—	—	—	—
i. Other					
(specify)_____	—	—	—	—	—

2. CONTROLS

a. Size	—	—	—	—	—
b. Shape	—	—	—	—	—
c. Spacing between controls	—	—	—	—	—
d. Resistance (too easy to turn or push, or too hard to turn or push)	—	—	—	—	—

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
e. Correct/Complete labels	—	—	—	—	—
f. Understandable labels	—	—	—	—	—
g. Size of labels	—	—	—	—	—
h. Location of labels	—	—	—	—	—
i. Absence of unrelated or confusing markings	—	—	—	—	—
j. Visibility of controls	—	—	—	—	—
k. Angle of view	—	—	—	—	—
l. Location of <u>critical</u> controls	—	—	—	—	—
m. Reach distance of <u>critical</u> controls	—	—	—	—	—
n. Location of <u>non-critical</u> controls	—	—	—	—	—
o. Reach distance of <u>non-critical</u> controls	—	—	—	—	—
p. Functional grouping (controls with related functions are grouped together)	—	—	—	—	—
q. Control type (type of control is appropriate for type of function)	—	—	—	—	—
r. Other (Specify)_____	—	—	—	—	—
_____	—	—	—	—	—

[illegible]

F. UNIT UNDER TEST (UUT) STATION

Using the scale to the right indicate with a check mark (✓) how adequate the UUT Station is in each of the following areas:

1. CONTROLS

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
a. Size	—	—	—	—	—
b. Shape	—	—	—	—	—
c. Spacing between controls	—	—	—	—	—
d. Resistance (too easy to turn or push, or too hard to turn or push)	—	—	—	—	—
e. Correct/Complete labels	—	—	—	—	—
f. Understandable labels	—	—	—	—	—
g. Size of labels	—	—	—	—	—
h. Location of labels	—	—	—	—	—
i. Absence of unrelated or confusing markings	—	—	—	—	—
j. Visibility of controls	—	—	—	—	—
k. Angle of view	—	—	—	—	—
l. Location of <u>critical</u> controls	—	—	—	—	—
m. Reach distance of <u>critical</u> controls	—	—	—	—	—
n. Location of <u>non-critical</u> controls	—	—	—	—	—
o. Reach distance of <u>non-critical</u> controls	—	—	—	—	—
p. Functional grouping (controls with related functions are grouped together)	—	—	—	—	—

G. PROGRAMMABLE INTERFACE UNIT
(PIU) STATION

Using the scale to the right indicate with a check mark (✓) how adequate the PIU) Station is in each of the following areas:

1. CONTROLS

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
a. Size	—	—	—	—	—
b. Shape	—	—	—	—	—
c. Spacing between controls	—	—	—	—	—
d. Resistance (too easy to turn or push, or too hard to turn or push)	—	—	—	—	—
e. Correct/Complete labels	—	—	—	—	—
f. Understandable labels	—	—	—	—	—
g. Size of labels	—	—	—	—	—
h. Location of labels	—	—	—	—	—
i. Absence of unrelated or confusing markings	—	—	—	—	—
j. Visibility of controls	—	—	—	—	—
k. Angle of view	—	—	—	—	—
l. Location of <u>critical</u> controls	—	—	—	—	—
m. Reach distance of <u>critical</u> controls	—	—	—	—	—
n. Location of <u>non-critical</u> controls	—	—	—	—	—
o. Reach distance of <u>non-critical</u> controls	—	—	—	—	—
p. Functional grouping (controls with related functions are grouped together)	—	—	—	—	—

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
q. Control type (type of control is appropriate for type of function)	—	—	—	—	—
r. Other (specify)_____	—	—	—	—	—

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

III. OVERALL CONFIGURATION OF ETF

A. EQUIPMENT LOCATION

Using the scale to the right indicate with a check mark (✓) the adequacy of the location within the ETF of each of the following pieces of equipment:

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
1. Video Display Terminal	—	—	—	—	—
2. Printer	—	—	—	—	—
3. UUT Station	—	—	—	—	—
4. PIU Station	—	—	—	—	—
5. DC Power Station	—	—	—	—	—
6. Control Station	—	—	—	—	—
7. Tape Station	—	—	—	—	—
8. Storage Racks	—	—	—	—	—
9. Storage Cabinets	—	—	—	—	—
10. Work Bench	—	—	—	—	—
11. Work Desk	—	—	—	—	—
12. Cables	—	—	—	—	—
13. Other (specify)_____	—	—	—	—	—

14. Explanation of Borderline, Mostly Inadequate, and Completely Inadequate responses.

B. WORKSPACE

Using the scale to the right indicate with a check mark (✓) the adequacy of the Workspace and Storage Space within the ETF

Using the scale to the right indicate with a check mark ✓) the adequacy of the <u>Workspace and Storage Space</u> within the ETF	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
1. Amount of workspace	—	—	—	—	—
2. Amount of storage space for tools	—	—	—	—	—
3. Amount of storage space for manuals	—	—	—	—	—
4. Amount of storage space for personal gear	—	—	—	—	—
5. Amount of storage space for other items _____	—	—	—	—	—

6. Explanation of Borderline, Mostly Inadequate, and Completely Inadequate responses.

[illegible]

IV. JOB PROCEDURES

Using the scale to the right indicate with a check mark (✓) how easy or difficult it is to perform each of the following procedures:

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
A. POWER-UP THE EQUIPMENT						
1. Prepare the ETF for operation	___	___	___	___	___	___
2. Cable the system for operation	___	___	___	___	___	___
3. Power up to standby power-on	___	___	___	___	___	___
4. Power up to control and display subsystem power-on	___	___	___	___	___	___
5. Power up to full power-on	___	___	___	___	___	___
6. Recover from loss of power	___	___	___	___	___	___
7. Other procedures (specify)	___	___	___	___	___	___

8. Explanation of Borderline, Difficult, and Very Difficult

[illegible]

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
B. MAGNETIC TAPE AND DISK CARTRIDGE HANDLING						
1. Load the magnetic tape	—	—	—	—	—	—
2. Unload the magnetic tape	—	—	—	—	—	—
3. Install the disk cartridge	—	—	—	—	—	—
4. Remove the disk cartridge	—	—	—	—	—	—
5. PREPARE A NEW DISK FOR USE	—	—	—	—	—	—
a. Format the disk	—	—	—	—	—	—
b. Initialize the disk	—	—	—	—	—	—
c. Install a system bootstrap loader	—	—	—	—	—	—
d. Transfer OS software from tape to disk	—	—	—	—	—	—
e. Build a duplicate disk	—	—	—	—	—	—
6. Prepare an OS Diagnostic Disk (DDOS)	—	—	—	—	—	—
7. Verify a disk	—	—	—	—	—	—
8. Generate a system tape using The OS	—	—	—	—	—	—
9. Other procedures (specify)	—	—	—	—	—	—

8. Explanation of Borderline, Difficult, and Very Difficult

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
C. COMPUTER START-UP						
1. Normal start up from disk	—	—	—	—	—	—
2. Start up from duplicate disk	—	—	—	—	—	—
3. Start up from magnetic tape	—	—	—	—	—	—
4. Restart system	—	—	—	—	—	—
5. Other procedures (specify)	—	—	—	—	—	—

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
D. DATA HANDLING						
1. System release	—	—	—	—	—	—
2. Tape release	—	—	—	—	—	—
3. Load UUT program from tape to disk	—	—	—	—	—	—
4. Duplicate disk file	—	—	—	—	—	—
5. Delete disk file	—	—	—	—	—	—
6. Search file name	—	—	—	—	—	—
7. Display file content on VDT	—	—	—	—	—	—
8. Print file content on printer	—	—	—	—	—	—
9. Other procedures (specify)	—	—	—	—	—	—

10. Explanation of Borderline, Difficult, and Very Difficult

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
E. TESTING THE UUT						
1. Test line replaceable units (LRUs) using the 410	—	—	—	—	—	—
2. Identify the UUT to determine the hardware and software necessary to test it	—	—	—	—	—	—
3. Select and install the correct memory pack	—	—	—	—	—	—
4. Determine the required mode of equipment operation	—	—	—	—	—	—
5. Connect the UUT to the 410 while following the display diagrams on the VDT	—	—	—	—	—	—
6. Follow the TPS program instructions	—	—	—	—	—	—
7. Probe and test the UUT while following the computer instructions	—	—	—	—	—	—
8. Test UUTs with 465 DCT	—	—	—	—	—	—
9. Other procedures (specify)	—	—	—	—	—	—
10. Explanation of Borderline, Difficult, and Very Difficult						
<hr/>						
<hr/>						
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	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
F. SELF TESTING AND ALIGNING						
1. Control and display subsystem Testing						
a. Perform the DDCS self test	—	—	—	—	—	—
b. Perform the DTOS self test	—	—	—	—	—	—
c. Perform the video terminal self test	—	—	—	—	—	—
d. Perform the line printer self test	—	—	—	—	—	—
2. Self Testing						
a. Perform the full ILSST.IC self test	—	—	—	—	—	—
b. Perform the UUT Test Survey Leader self test	—	—	—	—	—	—
3. Systems Alignment Run the SYSCAL Program	—	—	—	—	—	—
a. Manual Mode	—	—	—	—	—	—
b. Automatic Mode	—	—	—	—	—	—
c. Run all mode	—	—	—	—	—	—
d. Information Mode	—	—	—	—	—	—
4. Perform the 465 DCT self test	—	—	—	—	—	—
5. Other procedures (specify)	—	—	—	—	—	—

[illegible]

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
G. OPERATING THE TEST EQUIPMENT						
1. Operate the computer using the Command line printer (CLI)						
2. Store and maintain Test Program Sets (TPSs)	—	—	—	—	—	—
3. Load paper in the line printer	—	—	—	—	—	—
4. Use the oscilloscope	—	—	—	—	—	—
5. Other procedures (specify)	—	—	—	—	—	—

[illegible]

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
I. ADMINISTRATIVE AND OTHER PROCEDURES						
1. Assist the team chief in organizing the workload for the 105 facility	—	—	—	—	—	—
2. Perform duties of team chief when the team chief is absent	—	—	—	—	—	—
3. Keep up-to-date log on the 410 and 465 run times	—	—	—	—	—	—
4. Advise team chief of improperly handled or abused items	—	—	—	—	—	—
5. Route faulty modules through the fault isolation and repair process	—	—	—	—	—	—
6. Prepare and maintain the required forms, records and reports	—	—	—	—	—	—
7. Assist maintenance technicians in preventative maintenance and repair of the 410	—	—	—	—	—	—
8. Use the technical manuals to operate and maintain the test equipment	—	—	—	—	—	—
9. Other procedures (specify)	—	—	—	—	—	—

6. Explanation of Borderline, Difficult, and Very Difficult

	Very Easy	Easy	Borderline	Difficult	Very Difficult	Did Not Perform
J. MAINTENANCE						
1. Perform preventative maintenance checks and services on the ETF	—	—	—	—	—	—
2. Repair the 410 by replacing assemblies and PCBs	—	—	—	—	—	—
3. Perform preventative maintenance checks and services on the oscilloscope	—	—	—	—	—	—
4. Assist the maintenance technician in performing preventive maintenance and repairs on the 410	—	—	—	—	—	—
5. Remove and replace a power supply	—	—	—	—	—	—
6. Replace test operators panel lamp	—	—	—	—	—	—
7. Perform maintenance on the Individual stations	—	—	—	—	—	—
a. DC Station	—	—	—	—	—	—
b. Control Station	—	—	—	—	—	—
c. UUT Station	—	—	—	—	—	—
d. PIU Station	—	—	—	—	—	—
e. Tape Station	—	—	—	—	—	—
f. 465 DCT	—	—	—	—	—	—
8. Other procedures (specify)	—	—	—	—	—	—

[illegible]

	Completely Adequate	Mostly Adequate	Borderline	Mostly Inadequate	Completely Inadequate
V. COMPUTER SOFTWARE					
Using the scale to the right, indicate with a check mark (✓) the adequacy of the computer software in each of the following areas:					
1. Type of user-software dialogue	—	—	—	—	—
2. Consistency of display formats	—	—	—	—	—
3. Clarity of prompts	—	—	—	—	—
4. Usefulness of prompts	—	—	—	—	—
5. Timeliness of prompts	—	—	—	—	—
6. Clarity of error messages	—	—	—	—	—
7. Usefulness of error messages	—	—	—	—	—
8. Timeliness of error messages	—	—	—	—	—
9. Clarity of test procedures listed in the software	—	—	—	—	—
10. Requirements for remembering related information while executing a program	—	—	—	—	—
11. Other (specify)	—	—	—	—	—

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

VI. SAFETY

Indicate with a check mark (✓) whether you experienced or nearly experienced any of the following safety hazards operating the ETF

	Experienced	Nearly Experienced	Neither Experienced Nor Nearly Experienced But Is A Hazard	Not A Hazard
1. Electrical Shock	_____	_____	_____	_____
2. Burns	_____	_____	_____	_____
3. Cut or Abrasions	_____	_____	_____	_____
4. Extreme Brightness	_____	_____	_____	_____
5. Extreme Loudness	_____	_____	_____	_____
6. Noxious Fumes	_____	_____	_____	_____
7. Other (specify)	_____	_____	_____	_____
8. Explanation of the above items which received checks in the "Experienced", "Nearly Experienced" and "Is a Hazard" categories.				

9. Were any of the procedures you were required to perform during emplacement or displacement of the system unsafe in that you risked personal harm or damage to the facility by performing them?				
() Yes () No				
Explanation of "Yes" _____				

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Appendix D. Human Factors Engineering Evaluation of Regency Net Equipment

This appendix appears in its original form, without editorial change.

Regency
Human Factors Engineering Evaluation of Regency Net Equipment
Form 601-4-65

Purpose: The items on this form ask you to evaluate various human factors aspects of the equipment you use. Given this and other information, corrective action can be taken to improve equipment design, operator training, task requirements, and task performance. Only Army Research Institute researchers will have access to your ratings. Therefore, please be honest and objective in your ratings.

To start with: Enter you PIN number, and current rank in the spaces provided. Circle your current MOS. Your PIN number is required so that ARI research personnel may contact you if they need more information regarding your responses.

1. PIN No. | ___ | ___ | ___ | 2. Rank: | ___ | ___ | ___ |
3. Circle your current MOS: 31C 29S 52 29E Other _____

The Regency Net system is composed of many items of equipment, such as I/O Units, Vehicular Adapters, Receiver-Transmitters. Operation and maintenance of the equipment may require manual or electronic adjustment of different parts (e.g., display screens, touchpoints, connectors, cables, indicator lights) of these components. On each of the following pages an equipment component will be identified, and several human factors aspects of the component will be noted. Some of these human factors aspects may be unsatisfactory, needing correction or modification; some may be satisfactory as they are. Your task is to rate how satisfactory-unsatisfactory each Listed human factor is for the component named on each page. There are five rating categories available for your use. They have the following names and abbreviations:

RATING CATEGORIES	ABBREVIATION	NUMERICAL VALUE
Very Unsatisfactory	VU	-2
Unsatisfactory	U	-1
Borderline	B	0
Satisfactory	S	+1
Very Satisfactory	VS	+2

The rating scale below contains the abbreviations (to save space) of these five categories. The purpose of the numbers is to show that the ratings change from negative to positive, with a 0 under B (for Borderline) to show it is neither negative or positive. The underlines give you a place on which to mark your choice of the five ratings.

VU U B S VS
-2 -1 0 +1 +2

— — — — — (Check beneath the rating
you choose to give.

RATINGS OF DISPLAY SCREEN FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
4. Brightness.....	—	—	—	—	—
5. Glare.....	—	—	—	—	—
6. Flicker.....	—	—	—	—	—
7. Letter clarity.....	—	—	—	—	—
8. Viewing distance.....	—	—	—	—	—
9. Angle of view.....	—	—	—	—	—
10. Location of display.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated.
Please enter the item number in front of your comment.

RATINGS OF TOUCHPOINT FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
11. Size.....	—	—	—	—	—
12. Shape.....	—	—	—	—	—
13. Spacing.....	—	—	—	—	—
14. Label understandability.....	—	—	—	—	—
15. Label relevance.....	—	—	—	—	—
16. Label location.....	—	—	—	—	—
17. Brightness.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated.
Please enter the item number in front of your comment.

RATINGS OF INDICATOR LIGHT FACTORS

Rating Categories	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
VU = Very Unsatisfactory					
U = Unsatisfactory					
B = Borderline					
S = Satisfactory					
VS = Very Satisfactory					

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
19. Brightness.....	—	—	—	—	—
20. Glare.....	—	—	—	—	—
21. Flicker.....	—	—	—	—	—
22. Viewing distance.....	—	—	—	—	—
23. Angle of view.....	—	—	—	—	—
24. Label understandability.....	—	—	—	—	—
25. Label correctness.....	—	—	—	—	—
26. Label visibility.....	—	—	—	—	—
27. Location of indicators.....	—	—	—	—	—
28. Provides needed information in a timely manner.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated. Please enter the item number in front of your comment.

RATINGS OF CONNECTOR FACTORS

Rating Categories

VU	U	B	S	VS
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	VU	U	B	S	VS
	-2	-1	0	+1	+2
29. Brightness.....	—	—	—	—	—
30. Glare.....	—	—	—	—	—
31. Flicker.....	—	—	—	—	—
32. Letter clarity.....	—	—	—	—	—
33. Viewing distance.....	—	—	—	—	—
34. Angle of view.....	—	—	—	—	—
35. Location of display.....	—	—	—	—	—
36. Label understandability.....	—	—	—	—	—
37. Label location.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated.

Please enter the item number in front of your comment.

RATINGS OF CABLE FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

- | | | | | | |
|--|---|---|---|---|---|
| 38. Coding on insulation
(should be about every
12 inches) | — | — | — | — | — |
| 39. Routing (for easy of
inspection & maintenance)..... | — | — | — | — | — |
| 40. Positioned to avoid damage
by tools, hands, feet..... | — | — | — | — | — |
| 41. Safety (protection from
sharp edges)..... | — | — | — | — | — |
| 42. Mating information (labeled
to indicate where matings
are to occur)..... | — | — | — | — | — |

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated. Please enter the item number in front of your comment.

RATINGS OF DISPLAY SCREEN FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
43. Frequency (too high, too low).....	—	—	—	—	—
44. Detectability.....	—	—	—	—	—
45. Intensity.....	—	—	—	—	—
46. Duration.....	—	—	—	—	—
47. Ease of volume adjustment.....	—	—	—	—	—
48. Amount of volume adjustment available.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated.
Please enter the item number in front of your comment.

RATINGS OF PUSHBUTTON AND SWITCH FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
49. Shape (concave - to avoid finger slipping).....	—	—	—	—	—
50. System responsiveness (evidence of system response when pushed).....	—	—	—	—	—
51. Size.....	—	—	—	—	—
52. Resistance (too hard, too sensitive).....	—	—	—	—	—
53. Amount of displacement required.....	—	—	—	—	—
54. Label understandability.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated. Please enter the item number in front of your comment.

RATINGS OF TOGGLE SWITCH FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
55. Size.....	—	—	—	—	—
56. Accidental change of switch position?.....	—	—	—	—	—
57. Distance between on and off positions.....	—	—	—	—	—
58. System responsiveness (evidence of system response when pushed).....	—	—	—	—	—
59. Direction of movement (vertical with "down" to turn off).....	—	—	—	—	—
60. Labeling (for each position).....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated.
Please enter the item number in front of your comment.

RATINGS OF FUSE FACTORS

Rating Categories	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
VU = Very Unsatisfactory					
U = Unsatisfactory					
B = Borderline					
S = Satisfactory					
VS = Very Satisfactory					
	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
61. Positive indication of open circuit.....	—	—	—	—	—
62. Availability of special tools to remove other components.....	—	—	—	—	—
63. Identification label is on equipment.....	—	—	—	—	—
64. Rating is marked on fuse holder.....	—	—	—	—	—
65. Label legibility.....	—	—	—	—	—
66. Ground connection.....	—	—	—	—	—
67. Fan operation.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated. Please enter the item number in front of your comment.

RATINGS OF KEYPAD FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
68. Size.....	—	—	—	—	—
69. Shape.....	—	—	—	—	—
70. Spacing of keys.....	—	—	—	—	—
71. Resistance (too easy or too hard to push).....	—	—	—	—	—
72. Label correctness.....	—	—	—	—	—
73. Label understandability.....	—	—	—	—	—
74. Label location.....	—	—	—	—	—
75. Brightness.....	—	—	—	—	—
76. System responsiveness to key touching.....	—	—	—	—	—
77. Acceptability of keyboard.....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated. Please enter the item number in front of your comment.

RATINGS OF HANDSET AUDIO FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

78. Ease of volume adjustment..... — — — — —

79. Amount of volume
adjustment..... — — — — —

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated.
Please enter the item number in front of your comment.

RATINGS OF ROTARY SWITCH FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
80. Shapes.....	—	—	—	—	—
81. Position (not opposite each other).....	—	—	—	—	—
82. Resistance to turning	—	—	—	—	—
83. Pointer visibility.....	—	—	—	—	—
84. Parallax (pointer too far from scale?).....	—	—	—	—	—
85. Distance between index marks on scale.....	—	—	—	—	—
86. System responsiveness (to movement of pointer).....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated.

Please enter the item number in front of your comment.

RATINGS OF VOLTAGE METER FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

87. Readable (in all ambient lighting conditions).....	—	—	—	—	—
88. Glare.....	—	—	—	—	—
89. Legibility of numbers.....	—	—	—	—	—
90. Viewing distance.....	—	—	—	—	—
91. Label location.....	—	—	—	—	—
92. Location of meter.....	—	—	—	—	—
93. Adjustability (for visual access).....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated. Please enter the item number in front of your comment.

RATINGS OF SLIDE SWITCH FACTORS

Rating Categories

<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
-2	-1	0	+1	+2

VU = Very Unsatisfactory

U = Unsatisfactory

B = Borderline

S = Satisfactory

VS = Very Satisfactory

	<u>VU</u>	<u>U</u>	<u>B</u>	<u>S</u>	<u>VS</u>
	-2	-1	0	+1	+2
94. Protection against accidental activation.....	—	—	—	—	—
95. Size	—	—	—	—	—
96. Resistance pattern when being turned.....	—	—	—	—	—
97. Distance between positions (RESET/OFF).....	—	—	—	—	—
98. System responsiveness (to movement of slide switch).....	—	—	—	—	—
99. Orientation (vertical motion downward to turn off).....	—	—	—	—	—

If any of the above human factors aspects reduced your task performance effectiveness, a brief comment about it and its effect would be appreciated. Please enter the item number in front of your comment.

Appendix E. Resource Material for Health Hazards, System Safety, and Risk Assessment Matrix

This appendix appears in its original form, without editorial change.

RESOURCE MATERIAL FOR HEALTH HAZARDS, SYSTEM SAFETY AND RISK ASSESSMENT MATRIX

Much of the material contained in this section has been abstracted from a document entitled: CLASSIFICATION OF DEFICIENCIES AND SHORTCOMINGS. This material represents an abstract of selected sections that have been found directly relevant to implementing MANPRINT assessment in these domains. In this abstraction process, material is abstracted from the whole text and is sometimes quoted in total; other times it is paraphrased.⁴

1. Purpose and Scope. This material describes criteria intended to provide consistent guidance for classification of appropriate material test incidents and test results as deficiencies and shortcomings and is used to address problems identified by the MANPRINT Analysts that are generally categorized as falling within the Health Hazards and System Safety domains. While other organizational entities have primary responsibility for certification within these domains, the MANPRINT Analyst reports problems falling within these domains that he observes and/or have been reported to him by test participants. As such, the basic data analyzed by the MANPRINT Analyst are Test Incident Reports (TIRs). Occasionally those participants are Subject Matter Experts (SME); most often they are soldiers who are expected to operate and maintain the system under test once it is fielded. All guidance concerning classification of test incidents is intended for use in classifying deficiencies, shortcomings, suggested improvements, and other incidents. When SMEs are used this intent is more nearly met than when representative test participants are providing their opinions. As such opinions and judgments are combined to provide frequency of the reported problems. Categorization of those problems is used as an indicant of a problem that may require further study by the Training System Manager prior to recommending changes in the material system or operating procedures.

2. TECHNICAL PRESENTATION

a. Deficiency.

- 1) Definition: A deficiency has been defined as a defect or malfunction discovered during the life cycle of an equipment that constitutes a safety hazard to personnel that will result in serious damage to the equipment if operation is continued or indicates improper design or other cause of failure of an item or part which seriously impairs the equipment's operational capability. A deficiency normally disables or immobilizes the equipment; and if occurring during test phases, will serve as a bar to type classification action.

⁴ Effort has been to focus on content and usability of the material, but generally there has been no conscious effort made to attribute specific authorship when the material was quoted verbatim. There is no claim or representation to indicate that the author of this Tutorial document claims credit for the specific wording when quotes are used, but not credited. This liberty has been taken as an expedient to pull together a sizeable body of knowledge in a short time. In those cases, the author of this document requests forgiveness by the true authors. Material contained herein has been extracted from a now obsolete document: Test Operations Procedures 1-1-012, CLASSIFICATION OF DEFICIENCIES AND SHORTCOMINGS, 1 April 1979.

2) Classification: In analysis of test results great care must be taken to insure proper classification of a test incident as a deficiency or a shortcoming. The use of judgment, both technical and military, is necessary together with the use of regulating criteria in the analysis of test incidents before classifying them. To adequately understand the fine difference dividing a deficiency from a shortcoming it is necessary to examine the definitions in great detail. In order for a test incident to be considered a deficiency it must (1) be a characteristic which causes the failure, not the failure itself, (2) materially and seriously degrade the operational capability of the item, (3) not be the result of an isolate failure, (4) apply to the population from which the sample was drawn, and (5) be stated with reasonable certainty that it is characteristic of the items under test.

b. Shortcoming.

Definition: A shortcoming is an imperfection or malfunction occurring during the life cycle of equipment, which should be reported and which must be corrected to increase efficiency and to render the equipment completely serviceable. It will not cause an immediate breakdown, jeopardize safe operation, or materially reduce the usability of the material or end product. If occurring during test phases the shortcoming should be corrected if it can be done without unduly complicating an item or inducing another undesirable characteristic such as increased cost, weight, etc.

c. Suggested Improvements.

Definition: A suggested improvement is an increase in quality or performance which is desirable but not imperative.

d. Hazard Level Categories. MIL-STD-882 requires that safety hazards be categorized by both severity and probability. When these ratings are obtained they are generally asked for through separate instruments to increase the likelihood that the judgments are independent. It is not appropriate to classify all catastrophic and critical hazards as deficiencies and all marginal hazards as shortcomings. The proper classification procedures are shown in Figure 2. The following definitions apply to the terms used in that figure.

1) Hazard Severity. A qualitative assessment of the worst potential consequences, defined by the degree of injury, occupational illness, property damage, or equipment damage that could ultimately occur.

2) Hazard Probability. The likelihood, expressed in quantitative or qualitative terms, that a hazard will occur.

			FREQUENT	REASONABLY PROBABLE	OCCASIONAL	REMOTE	EXTREMELY IMPROBABLE	IMPOSSIBLE
SPECIFIC INDIVIDUAL → ITEM			Likely to occur frequently	Will occur several times in life of item	Likely to occur sometime in the life of item	So unlikely, can be assumed that this hazard will not be experienced	Probability of occurrence can't be distinguished from zero	Physically impossible to occur
FLEET OR INVENTORY →			Continuously experienced	Will occur frequently	Will occur several times	Unlikely to occur, but possible	So unlikely, can be assumed that this hazard will not be experienced	Physically impossible to occur
			A	B	C	D	E	F
HAZARD SEVERITY	CATASTROPHIC- May cause death or system loss	I	DEFICIENCY	DEFICIENCY	DEFICIENCY	DEFICIENCY	SUGGESTED IMPROVEMENT OR ACCEPTABLE	ACCEPTABLE
	CRITICAL- May cause severe injury or illness, or major system damage	II	DEFICIENCY	DEFICIENCY	DEFICIENCY	SHORTCOMING	SUGGESTED IMPROVEMENT OR ACCEPTABLE	ACCEPTABLE
	MARGINAL- May cause minor injury or illness, or minor system damage	III	DEFICIENCY	SHORTCOMING	SHORTCOMING	SUGGESTED IMPROVEMENT	SUGGESTED IMPROVEMENT OR ACCEPTABLE	ACCEPTABLE
	NEGLIGIBLE- Will not result in injury or illness, or system damage	IV	SHORTCOMING	SUGGESTED IMPROVEMENT	SUGGESTED IMPROVEMENT	SUGGESTED IMPROVEMENT OR ACCEPTABLE	SUGGESTED IMPROVEMENT OR ACCEPTABLE	ACCEPTABLE

Figure 1 Hazard Probability vs. Hazard Severity: Risk Assessment Matrix

Appendix F. Maneuver Control System (MCS) Training Questionnaire

This appendix appears in its original form, without editorial change.

MCS/P IOT&E

TRAINING QUESTIONNAIRE

June 24 1996

Privacy Act Statement

Authority; 5 USC § 301, Authority for the Secretary of the Army to Issue Army Regulations, AR 73-1, Test and Evaluation Policy.

Principal Purpose: The data to be collected with this form are to be used for research and evaluation purposes only.

Routine Uses: This is an experimental data collection questionnaire developed by the Test and Experimentation Command pursuant to its research and testing mission as prescribed in AR 73-1. When identifier (name and social security number) are requested they are to be used for administrative and statistical control purposes only. Full confidentiality of the responses will be maintained in the processing of these data.

Disclosure: Completion of this questionnaire is voluntary. You are encouraged to provide complete and accurate information in the interests of research and testing, but there will be no effect on individuals for not providing any part of the information.

1.) Date: _____

2.) Name: _____ | _____
(last name, first name)

3.) Questionnaire Serial #: TR _ _ _

4.) Last four digits of your social security number: _ _ _ _

5.) Duty position (mark one ☐): ☐ operator ☐ supervisor ☐ staff ☐ commander ☐ other

6.) Training Dates: Start (YYMMDD) _ _ _ _ _ End (YYMMDD) _ _ _ _ _

Instructions

The purpose of this questionnaire is to get your opinions about MCS/P. The questionnaire is important because your answers will help us judge how well MCS/P has been built for soldiers. Your answers will not be given to or shown to anyone except those who are evaluating MCS/P for the Army. (For example, none of your information will be given to your chain of command or put in your personnel file) Your answers will be treated confidentially. Please fill out the questionnaire carefully. If you need additional space to answer a question, indicate by an arrow (→) and continue on the back of the page. Be sure to number the item on the back of the page. If you have any questions concerning this questionnaire, please contact a TEXCOM representative for help. **Thank you for your help.**

PART 1: Training Evaluation

7.) Which type of training are you evaluating? (mark one ☐)

☐ Staff User (SU) ☐ System Manager (SM) ☐ System Maintainer ☐ Senior Staff (SS) ☐ Executive (EX)

8.) The amount of time spent on hands-on training was (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

9. The amount of time spent you had to ask questions was (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

10.) Did this training train you to a level that allowed you to operate the equipment without help from someone else? (mark one ☐):

☐ yes ☐ no → please explain:

11.) The use of training support materials (TMs, handouts, videos, Vu-graph slides) was (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

12.) The opportunities to practice skills with other operators was (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

13.) The opportunities to get help from instructors was (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

14.) The content of instructor handouts was (mark one ☐):

☐ very appropriate ☐ appropriate ☐ borderline ☐ inappropriate ☐ very inappropriate

15. The format of instructor handouts was (mark one ☐):

☐ very appropriate ☐ appropriate ☐ borderline ☐ inappropriate ☐ very inappropriate

16. The content of Vu-graph slides (overhead slides) was (mark one ☐):

☐ very appropriate ☐ appropriate ☐ borderline ☐ inappropriate ☐ very inappropriate

17.) The format of Vu-graph slides (overhead slides) was (mark one ☐):

☐ very appropriate ☐ appropriate ☐ borderline ☐ inappropriate ☐ very inappropriate

18.) Do the guide sheets for practical exercises make sense? (mark one ☐):

☐ yes ☐ no → please explain: _____

19.) Are critical (primary) tasks clearly identified (mark one ☐):

☐ yes ☐ no → please explain: _____

20.) Are the training goals of this training clearly stated? (mark one ☐):

☐ yes ☐ no → please explain: _____

21.) The standards used to evaluate your progress were (mark one ☐):

☐ very appropriate ☐ appropriate ☐ borderline ☐ inappropriate ☐ very inappropriate

22.) Did you have a chance to practice new skills after they were taught (practice did not have to wait until many new skills were presented? (mark one ☐):

☐ yes ☐ no → please explain: _____

23.) Training time was used (mark one ☐):

☐ very effectively ☐ effectively ☐ borderline ☐ ineffectively ☐ very ineffectively

24.) The instruction on the use of equipment TMs was (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

25.) System safety issues addressed in class were (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

26.) Is the software version trained the same version installed on the equipment used in class?

(mark one ☐):

☐ yes ☐ no → please explain: _____

27.) The pace at which new material is presented in class is (mark one ☐):

☐ very appropriate ☐ appropriate ☐ borderline ☐ inappropriate ☐ very inappropriate

28.) Were you allowed to practice all new or updated tasks in class? (mark one ☐):

☐ yes ☐ no → please explain: _____

29.) When compared to the length of class time, the number of new tasks/procedures was (mark one ☐):

☐ very adequate ☐ adequate ☐ borderline ☐ inadequate ☐ very inadequate

30.) Was refresher training on old tasks and procedures provided? (mark one ☐):

☐ yes ☐ no → please explain: _____

31.) After you completed the training, do you have the ability to perform all critical tasks and procedures?

(mark one ☐):

☐ yes ☐ no → please explain: _____

PART II: Training Devices

Training Device Technique or Topic	Used During Training?		<u>Time Spent</u>		
	NO	YES	Too Much	About Right	Too Little
32.) Lecture and Discussion	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33.) Hands-on Training	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34.) Refresher Training on Old Tasks	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35.) Practical Exercises	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36.) Instruction of Critical Tasks	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37.) Discussion of Safety Issues	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38.) Actual Equipment to be Operated in Unit	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART II: Training Devices (continued)

Training Device Technique or Topic	Used During Training?		<u>Time Spent</u>		
	NO	YES	Too Much	About Right	Too Little
39.) Video Tapes	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
40.) Technical Manuals	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42.) Vu-graphs (overhead slides)	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
43.) Computer Screen Projector	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44.) Actual Commun- ications Network	<input type="checkbox"/>	<input type="checkbox"/> → → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45.) Total Amount of Training Time		→ → →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART III: MCS/P Tasks

KEY: M=Need Much More, SM=Need Some More, R=About Right, SL=Need Some Less, L=Need Much Less

Task or Operation	<u>Task Trained</u>		<u>Training Time/ Task Coverage</u>				
	No	Yes	M	SM	R	SL	L
46.) Perform MCS/P and SICPS Maintenance	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
47.) Prepare MCS/P for Operations	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
48.) Perform PMCS on the MCS/P Equipment	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49.) Prepare MCS/P for Movement	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
50.) Troubleshoot/ Fault Isolate the MCS/P Equipment	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
51.) Employ a SICPS	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART III: MCS/P Tasks (continued)

KEY: M=Need Much More, SM=Need Some More, R=About Right, SL=Need Some Less, L=Need Much Less

Task or Operation	<u>Task</u> <u>Trained</u>		<u>Training Time/</u> <u>Task Coverage</u>				
	No	Yes	M	SM	R	SL	L
52.) Perform PMCS on the SICPS Equipment	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
53.) Troubleshoot/ Fault Isolate the SICPS Equipment	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
54.) Prepare the SICPS for Movement	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
55.) Troubleshoot/Fault Isolate and Restore the LAN	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
56.) Perform Information Security Functions	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
57.) Perform System Administration Functions	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
58.) Operate UTO Software	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
59.) Operate Reports Software	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
60.) Operate Message Software		<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
61.) Perform System Manager Functions	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
62.) Operate OPORD Software	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
63.) Operate Maps and Overlays Software	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
64.) Perform Briefing System Functions	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
65.) Perform Telestrator Functions	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
66.) Plan for CONOPS	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
67.) Plan the MCS/P Network Architecture	<input type="checkbox"/>	<input type="checkbox"/> →	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

68.) TEST SCORES (to be provided by TEXCOM):

SM PT #1: ___ ___ SM PT #2: ___ ___

SS WE: ___ ___ SS PE: ___ ___

Appendix G. Maneuver Control System Workload Questionnaire

This appendix appears in its original form, without editorial change.

MCS/P IOT&E

WORKLOAD QUESTIONNAIRE

June 24 1996

Privacy Act Statement

Authority: 5 USC § 301, Authority for the Secretary of the Army to Issue Army Regulations, AR 73-1, Test and Evaluation Policy.

Principal Purpose: The data to be collected with this form are to be used for research and evaluation purposes only.

Routine Uses: This is an experimental data collection questionnaire developed by the Test and Experimentation Command pursuant to its research and testing mission as prescribed in AR 73-1. When identifier (name and social security number) are requested they are to be used for administrative and statistical control purposes only. Full confidentiality of the responses will be maintained in the processing of these data.

Disclosure: Completion of this questionnaire is voluntary. You are encouraged to provide complete and accurate information in the interests of research and testing, but there will be no effect on individuals for not providing any part of the information.

1.) Date: _____

2.) Rank: ____ _

3.) Name: _____ | _____
(last name, first name)

4.) Questionnaire Serial #: WL ____ _

5.) Last four digits of your social security number: ____ _

6.) Duty position (mark one ☐): ☐ staff user ☐ system manager ☐ staff ☐ commander

Instructions: Using the definitions provided below, darken the appropriate circle on the scale For each aspect for each task listed. Please darken only in one of the circles provided. The Results of this questionnaire will be used to help the U.S. Army improve MCS/P for your use.

Thanks for the help.

Definitions of the six aspects you will be using with rating scales:

Aspect	Description
Mental Demand.....	How mentally demanding was the task?
Physical Demand.....	How physically demanding was the task?
Temporal Demand.....	How hurried or rushed was the pace of the task?
Performance.....	How successful were you in accomplishing what you were asked to do?
Effort.....	How hard did you have to work to accomplish your level of performance?
Frustration.....	How insecure, discouraged, irritated, and annoyed were you?

1. Perform MCS/P and SICPS Maintenance.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

2. Prepare MCS/P for Operations.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

3. Perform PMCS on the MCS/P Equipment.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

4. Prepare MCS/P for Movement.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

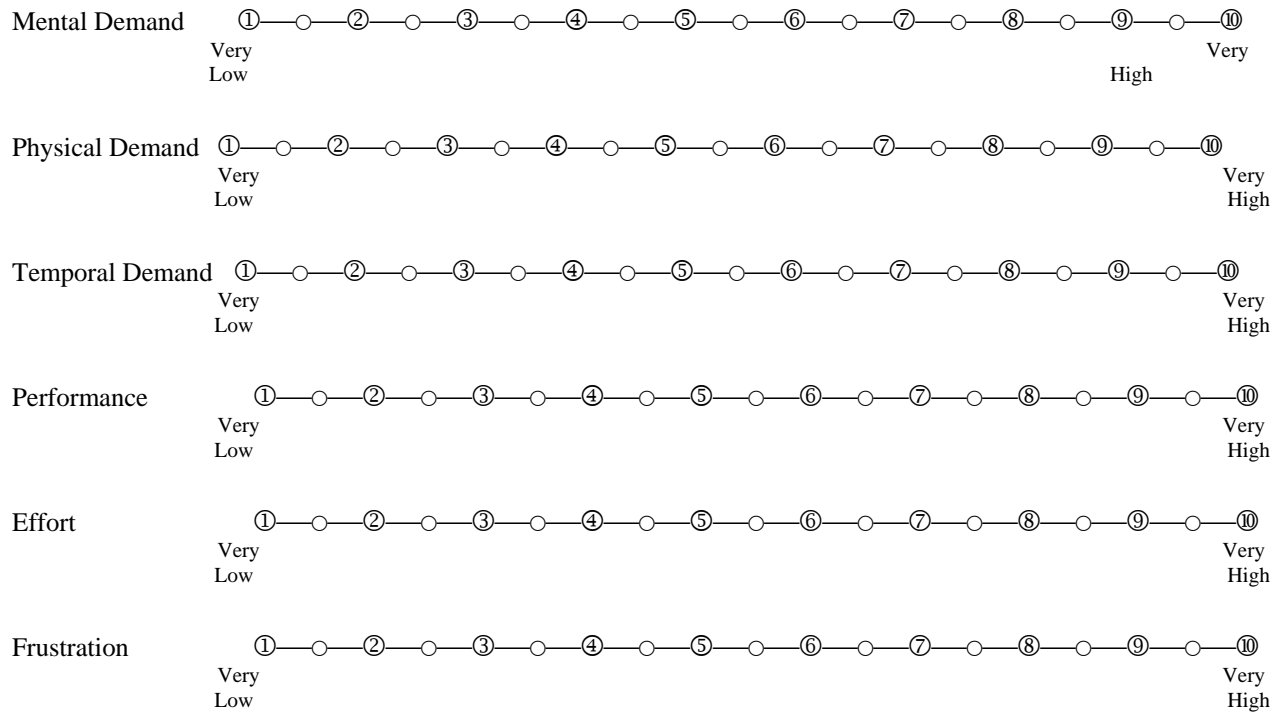
Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

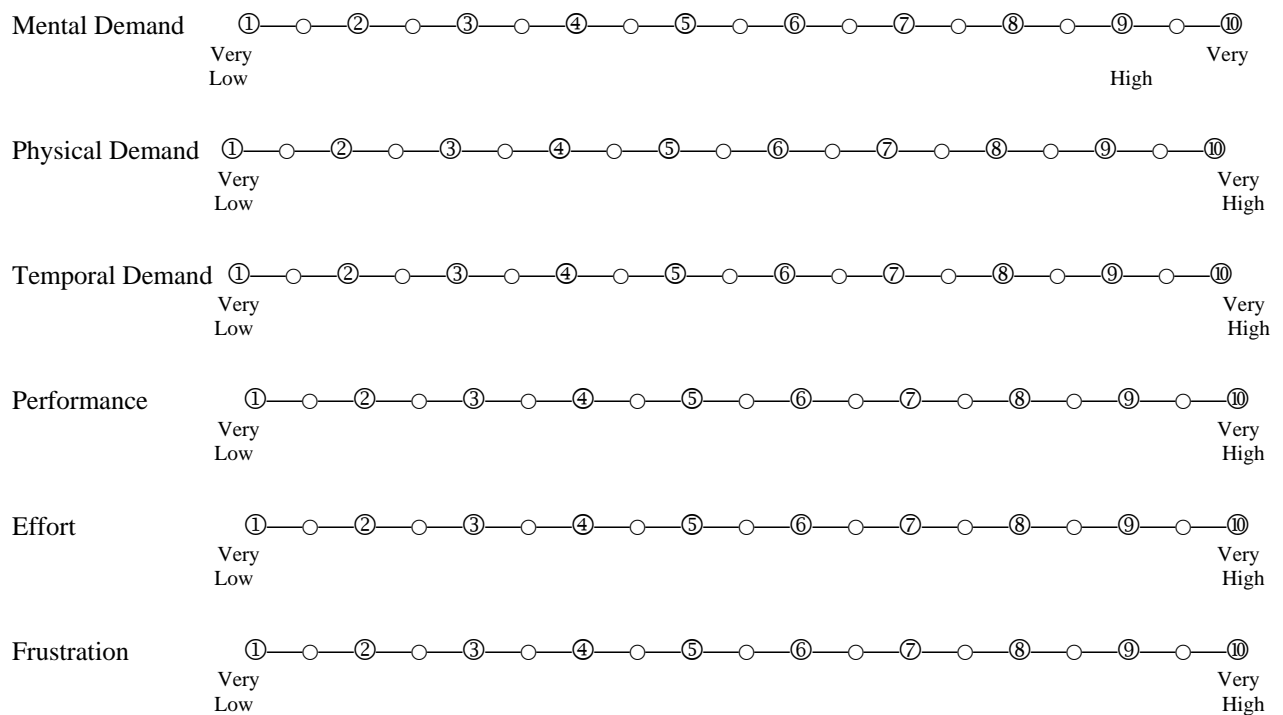
Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

5. Troubleshoot/Fault Isolate the MCS/P Equipment.



6. Employ a SICPS



7. Perform PMCS on the SICPS Equipment.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

8. Troubleshoot/Fault Isolate SICPS Equipment..

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

9. Prepare the SICPS for Movement.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

10. Troubleshoot/Fault Isolate and Restore the LAN.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

11. Perform Information Security Functions.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

12. Perform System Administration Functions.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

13. Operate UTO Software.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

14. Operate Reports Software.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

15. Operate Message Software.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

16. Perform System Manager Functions.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

17. Operate OPLAN/OPORD Software.

Mental Demand

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low High Very

Physical Demand

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Temporal Demand

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Performance

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Effort

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Frustration

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

18. Plan the MCS/P Network Architecture.

Mental Demand

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low High Very

Physical Demand

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Temporal Demand

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Performance

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Effort

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

Frustration

① — ○ — ② — ○ — ③ — ○ — ④ — ○ — ⑤ — ○ — ⑥ — ○ — ⑦ — ○ — ⑧ — ○ — ⑨ — ○ — ⑩

Very Low Very High

19. Plan for CONOPS.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

20. Execute CONOPS.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

21. Perform Briefing System Functions.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

22. Perform Telestrator Functions.

Mental Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low High Very

Physical Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Temporal Demand ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Performance ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Effort ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

Frustration ①—○—②—○—③—○—④—○—⑤—○—⑥—○—⑦—○—⑧—○—⑨—○—⑩
Very Low Very High

INTENTIONALLY LEFT BLANK.

**Appendix H. MANPRINT Survey/Interview Questions for All-Source
Analysis System (ASAS) Block II Initial Operational Test
and Evaluation (IOTE)**

This appendix appears in its original form, without editorial change.

Analysis and Control Element (ACE) IOTE
MANPRINT SURVEY/INTERVIEW QUESTIONS

Instructions:

1. Please check the Functional Identities on which you have been serving as an Operator and indicate your Echelon (e.g., Btn, Bde, Div) of operation. It is understood that some soldiers will be operating in more than one functionality.

<u>BIO/BACKGROUND/POSITION</u>		
Name _____ (Please Print)	PIN# _____ (Last 4 SSN)	Date _____ MM/DD/YY
<u>Functional Identities (ACE Components) on which you will be serving as a Test Participant Operator (please check):</u>		
<input type="checkbox"/> ISS		
<input type="checkbox"/> CCS		
<input type="checkbox"/> Shared SS		
<input type="checkbox"/> COMINT		
<input type="checkbox"/> IMINT		
<input type="checkbox"/> RIS/ELINT		
<input type="checkbox"/> SIGINT/MASINT		
<input type="checkbox"/> CI/HUMINT		
<input type="checkbox"/> OSINT		
<input type="checkbox"/> AS		
<input type="checkbox"/> SIT/IPB/DB		
<input type="checkbox"/> TGTDEV		
<input type="checkbox"/> CM/ISR		
<input type="checkbox"/> Asset Mgmt		
<input type="checkbox"/> Trusted Suite (TWS)		
Echelon (Btn, Bde, Div) _____		

2. This instrument contains a series of Statements. Statements 1-9 focus on Equipment (items a-n) within the ACE. Statements 10-18 focus on Functions (items a1-t1) of the ACE.

3. Statements differ only in the MANPRINT domain to which they refer. The domain is underlined in the stem of each statement.

4. As you insert each item within each stem to form a statement, ask yourself whether this is true (Y) or false (N) and record the answer in the column to the left of the item. Put Not Applicable (N/A) if you did not operate this piece of Equipment (or perform this Function) in the ACE.

5. For those cases where you recorded: true (Y), please make a Rating using the scale shown at the top of each page to record your amount of agreement with the Statement. Ratings should be recorded in the right hand column after each item.

6. IN CASES WHERE YOU INDICATE TRUE (Y), AN EXPLANATION "WHY" IS NEEDED. PLEASE WRITE YOUR RESPONSE ON THE BACK OF THIS FORM AND INDICATE FOR WHICH QUESTION YOU ARE MAKING COMMENT.

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Health Hazards

Y/N

Rating

1. Performing tasks or operations with _____ jeopardized my safety or that of another Team member.

_____	a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT)	_____
_____	b. Tactical communications support processor (TCSP)	_____
_____	c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN)	_____
_____	d. Direct wire line connection to AN/TYC-39 message switch	_____
_____	e. Ultra-high frequency net radio protocol (UHF-NRP)	_____
_____	f. <u>S</u> ecure <u>m</u> essaging <u>a</u> nd <u>r</u> outing <u>t</u> erminal (SMART)	_____
_____	g. Multi function work stations	_____
_____	h. Remote intelligence server	_____
_____	i. Trusted workstation	_____
_____	j. Web guards	_____
_____	k. Web shields	_____
_____	l. Trusted Guard System	_____
_____	m. Tactical image processing subsystem (TIPS)	_____
_____	n. Moving target indicator module	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Health Hazard

<u>Y/N</u>		<u>Rating</u>
	2. Have experienced or suspected one or more conditions associated with operating the _____ which I considered unhealthy.	_____
_____	a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT)	_____
_____	b. Tactical communications support processor (TCSP)	_____
_____	c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN)	_____
_____	d. Direct wire line connection to AN/TYC-39 message switch	_____
_____	e. Ultra-high frequency net radio protocol (UHF-NRP)	_____
_____	f. <u>S</u> ecure <u>m</u> essaging <u>a</u> nd <u>r</u> outing <u>t</u> erminal (SMART)	_____
_____	g. Multi function work stations	_____
_____	h. Remote intelligence server	_____
_____	i. Trusted workstation	_____
_____	j. Web guards	_____
_____	k. Web shields	_____
_____	l. Trusted Guard System	_____
_____	m. Tactical image processing subsystem (TIPS)	_____
_____	n. Moving target indicator module	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: System Safety

Y/N

Rating

3. Have noted safety problems (actual or potential) related to operation of _____.

- | | | |
|-------|--|-------|
| _____ | a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT) | _____ |
| _____ | b. Tactical communications support processor (TCSP) | _____ |
| _____ | c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN) | _____ |
| _____ | d. Direct wire line connection to AN/TYC-39 message switch | _____ |
| _____ | e. Ultra-high frequency net radio protocol (UHF-NRP) | _____ |
| _____ | f. Secure messaging and routing terminal (SMART) | _____ |
| _____ | g. Multi function work stations | _____ |
| _____ | h. Remote intelligence server | _____ |
| _____ | i. Trusted workstation | _____ |
| _____ | j. Web guards | _____ |
| _____ | k. Web shields | _____ |
| _____ | l. Trusted Guard System | _____ |
| _____ | m. Tactical image processing subsystem (TIPS) | _____ |
| _____ | n. Moving target indicator module | _____ |

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Training

Y/N

Rating

4. Have been required to perform one or more tasks or operations with _____ for which your training was poor or inadequate.

- | | | |
|-------|--|-------|
| _____ | a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT) | _____ |
| _____ | b. Tactical communications support processor (TCSP) | _____ |
| _____ | c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN) | _____ |
| _____ | d. Direct wire line connection to AN/TYC-39 message switch | _____ |
| _____ | e. Ultra-high frequency net radio protocol (UHF-NRP) | _____ |
| _____ | f. <u>S</u> ecure <u>m</u> essaging <u>a</u> nd <u>r</u> outing <u>t</u> erminal (SMART) | _____ |
| _____ | g. Multi function work stations | _____ |
| _____ | h. Remote intelligence server | _____ |
| _____ | i. Trusted workstation | _____ |
| _____ | j. Web guards | _____ |
| _____ | k. Web shields | _____ |
| _____ | l. Trusted Guard System | _____ |
| _____ | m. Tactical image processing subsystem (TIPS) | _____ |
| _____ | n. Moving target indicator module | _____ |

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Manpower

Y/N

Rating

5. Have been required to perform one or more tasks or operations with
_____ that required an additional Team Member.

_____	a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT)	_____
_____	b. Tactical communications support processor (TCSP)	_____
_____	c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN)	_____
_____	d. Direct wire line connection to AN/TYC-39 message switch	_____
_____	e. Ultra-high frequency net radio protocol (UHF-NRP)	_____
_____	f. <u>S</u> ecure <u>m</u> essaging <u>a</u> nd <u>r</u> outing <u>t</u> erminal (SMART)	_____
_____	g. Multi function work stations	_____
_____	h. Remote intelligence server	_____
_____	i. Trusted workstation	_____
_____	j. Web guards	_____
_____	k. Web shields	_____
_____	l. Trusted Guard System	_____
_____	m. Tactical image processing subsystem (TIPS)	_____
_____	n. Moving target indicator module	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Personnel

Y/N

Rating

6. Have been required to perform one or more tasks or operations with _____ that was outside of "normal" duties for my MOS and skill level.

_____ a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT) _____

_____ b. Tactical communications support processor (TCSP) _____

_____ c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN) _____

_____ d. Direct wire line connection to AN/TYC-39 message switch _____

_____ e. Ultra-high frequency net radio protocol (UHF-NRP) _____

_____ f. Secure messaging and routing terminal (SMART) _____

_____ g. Multi function work stations _____

_____ h. Remote intelligence server _____

_____ i. Trusted workstation _____

_____ j. Web guards _____

_____ k. Web shields _____

_____ l. Trusted Guard System _____

_____ m. Tactical image processing subsystem (TIPS) _____

_____ n. Moving target indicator module _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Human Factors Engineering--Procedures

Y/N

Rating

7. Have found procedures related to operation of _____ that were unnecessarily difficult, complicated or "unfriendly."

_____ a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT) _____

_____ b. Tactical communications support processor (TCSP) _____

_____ c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN) _____

_____ d. Direct wire line connection to AN/TYC-39 message switch _____

_____ e. Ultra-high frequency net radio protocol (UHF-NRP) _____

_____ f. Secure messaging and routing terminal (SMART) _____

_____ g. Multi function work stations _____

_____ h. Remote intelligence server _____

_____ i. Trusted workstation _____

_____ j. Web guards _____

_____ k. Web shields _____

_____ l. Trusted Guard System _____

_____ m. Tactical image processing subsystem (TIPS) _____

_____ n. Moving target indicator module _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Human Factors Engineering--Software

Y/N

Rating

8. Have found software problems associated with operation of
_____.

_____	a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT)	_____
_____	b. Tactical communications support processor (TCSP)	_____
_____	c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN)	_____
_____	d. Direct wire line connection to AN/TYC-39 message switch	_____
_____	e. Ultra-high frequency net radio protocol (UHF-NRP)	_____
_____	f. <u>S</u> ecure <u>m</u> essaging <u>a</u> nd <u>r</u> outing <u>t</u> erminal (SMART)	_____
_____	g. Multi function work stations	_____
_____	h. Remote intelligence server	_____
_____	i. Trusted workstation	_____
_____	j. Web guards	_____
_____	k. Web shields	_____
_____	l. Trusted Guard System	_____
_____	m. Tactical image processing subsystem (TIPS)	_____
_____	n. Moving target indicator module	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Equipment Focus: Human Factors Engineering--Placement

Y/N

Rating

9. Have found that placement of _____ (or their switches or indicators) made access or use difficult.

_____	a. TROJAN special purpose integrated remote intelligence terminal (SPIRIT)	_____
_____	b. Tactical communications support processor (TCSP)	_____
_____	c. Multiple Subscriber Equipment (MSE) tactical packet network (TPN)	_____
_____	d. Direct wire line connection to AN/TYC-39 message switch	_____
_____	e. Ultra-high frequency net radio protocol (UHF-NRP)	_____
_____	f. Secure messaging and routing terminal (SMART)	_____
_____	g. Multi function work stations	_____
_____	h. Remote intelligence server	_____
_____	i. Trusted workstation	_____
_____	j. Web guards	_____
_____	k. Web shields	_____
_____	l. Trusted Guard System	_____
_____	m. Tactical image processing subsystem (TIPS)	_____
_____	n. Moving target indicator module	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Health Hazards

<u>Y/N</u>		<u>Rating</u>
	10. Performing _____ jeopardized my safety or that of another Team Member.	
_____	a1. communications front end with the CCS	_____
_____	b1. an interface between Block II ACE <u>All Source</u> and <u>communication systems</u> with the CCS	_____
_____	c1. an interface between Block II ACE <u>Single Source</u> and <u>communication systems</u> with the CCS	_____
_____	d1. an interface between Block II ACE <u>All Source</u> and <u>forward tactical sensors</u> with the CCS	_____
_____	e1. an interface between Block II ACE <u>Single Source</u> and <u>forward tactical sensors</u> with the CCS	_____
_____	f1. receipt and relay of information <u>between</u> (vertical) and <u>within</u> (horizontal) echelons with the CCS	_____
_____	g1. multi-level security (MLS)--SCI and collateral traffic with the CCS	_____
_____	h1. support to COMINT	_____
_____	i1. support to ELINT	_____
_____	j1. support to CI/HUMINT	_____
_____	k1. support to Measurement and Signature Intelligence (MASINT)	_____
_____	l1. support to Open Source Intelligence (OSINT)	_____
_____	m1. support to All Source Fusion	_____
_____	n1. support to Situation Development	_____
_____	o1. support to IPB	_____
_____	p1. support to Target Identification	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Health Hazards

Y/N

Rating

10 (cont.) Performing _____ jeopardized my safety or that of
another Team Member.

_____	q1. support to Target Refinement	_____
_____	r1. support to Target Nomination	_____
_____	s1. support to ISR requirements	_____
_____	t1. support to Asset Management Responsibilities	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Health Hazards

Y/N

Rating

11. Have experienced or suspected one or more conditions associated with _____ which I considered unhealthy

_____ a1. using the CCS for front end communications _____

_____ b1. using the CCS to interface between Block II ACE All Source and communication systems with the CCS _____

_____ c1. using the CCS to interface between Block II ACE Single Source and communication systems _____

_____ d1. using the CCS to interface between Block II ACE All Source and forward tactical sensors _____

_____ e1. using the CCS to interface between Block II ACE Single Source and forward tactical sensors _____

_____ f1. using the CCS to receive/relay of information between (vertical) and within (horizontal) echelons _____

_____ g1. using the CCS to control multi-level security (MLS)--SCI and collateral traffic _____

_____ h1. using the ACE to support COMINT _____

_____ i1. using the ACE to support ELINT _____

_____ j1. using the ACE to support CI/HUMINT _____

_____ k1. using the ACE to support Measurement and Signature Intelligence (MASINT) _____

_____ l1. using the ACE to support Open Source Intelligence (OSINT) _____

_____ m1. using the ACE to support All Source Fusion _____

_____ n1. using the ACE to support Situation Development _____

_____ o1. using the ACE to support IPB _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Health Hazards

Y/N

Rating

11(cont) Have experienced or suspected one or more conditions associated with _____ which I considered unhealthy

_____ p1. using the ACE to support Target Identification _____

_____ q1. using the ACE to support Target Refinement _____

_____ r1. using the ACE to support Target Nomination _____

_____ s1. using the ACE to support ISR requirements _____

_____ t1. using the ACE to support Asset Management Responsibilities _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: System Safety

Y/N

Rating

12. Have noted system safety problems (actual or potential) related to operation of _____.

_____ a1. the CCS for front end communications _____

_____ b1. the CCS to interface between Block II ACE All Source and communication systems with the CCS _____

_____ c1. the CCS to interface between Block II ACE Single Source and communication systems _____

_____ d1. the CCS to interface between Block II ACE All Source and forward tactical sensors _____

_____ e1. the CCS to interface between Block II ACE Single Source and forward tactical sensors _____

_____ f1. the CCS to receive/relay of information between (vertical) and within (horizontal) echelons _____

_____ g1. the CCS to control multi-level security (MLS)--SCI and collateral traffic _____

_____ h1. the ACE to support COMINT _____

_____ i1. the ACE to support ELINT _____

_____ j1. the ACE to support CI/HUMINT _____

_____ k1. the ACE to support Measurement and Signature Intelligence (MASINT) _____

_____ l1. the ACE to support Open Source Intelligence (OSINT) _____

_____ m1. the ACE to support All Source Fusion _____

_____ n1. the ACE to support Situation Development _____

_____ o1. the ACE to support IPB _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: System Safety

Y/N

Rating

12(cont) Have noted system safety problems (actual or potential) related to operation of _____.

_____ p1. the ACE to support Target Identification _____

_____ q1. the ACE to support Target Refinement _____

_____ r1. the ACE to support Target Nomination _____

_____ s1. the ACE to support ISR requirements _____

_____ t1. the ACE to support Asset Management Responsibilities _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Training

Y/N

Rating

13. Have been required to perform one or more tasks or operations with _____ for which my training was poor or inadequate.

_____ a1. the CCS for front end communications _____

_____ b1. the CCS to interface between Block II ACE All Source and communication systems with the CCS _____

_____ c1. the CCS to interface between Block II ACE Single Source and communication systems _____

_____ d1. the CCS to interface between Block II ACE All Source and forward tactical sensors _____

_____ e1. the CCS to interface between Block II ACE Single Source and forward tactical sensors _____

_____ f1. the CCS to receive/relay of information between (vertical) and within (horizontal) echelons _____

_____ g1. the CCS to control multi-level security (MLS)--SCI and collateral traffic _____

_____ h1. the ACE to support COMINT _____

_____ i1. the ACE to support ELINT _____

_____ j1. the ACE to support CI/HUMINT _____

_____ k1. the ACE to support Measurement and Signature Intelligence (MASINT) _____

_____ l1. the ACE to support Open Source Intelligence (OSINT) _____

_____ m1. the ACE to support All Source Fusion _____

_____ n1. the ACE to support Situation Development _____

_____ o1. the ACE to support IPB _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Training

Y/N

Rating

13(cont). Have been required to perform one or more tasks or operations with _____ for which my training was poor or inadequate

_____	p1. the ACE to support Target Identification	_____
_____	q1. the ACE to support Target Refinement	_____
_____	r1. the ACE to support Target Nomination	_____
_____	s1. the ACE to support ISR requirements	_____
_____	t1. the ACE to support Asset Management Responsibilities	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Manpower

Y/N

Rating

14. Have been required to perform one or more tasks or operations with _____ that required an additional Team Member.

_____ a1. the CCS for front end communications _____

_____ b1. the CCS to interface between Block II ACE All Source and communication systems with the CCS _____

_____ c1. the CCS to interface between Block II ACE Single Source and communication systems _____

_____ d1. the CCS to interface between Block II ACE All Source and forward tactical sensors _____

_____ e1. the CCS to interface between Block II ACE Single Source and forward tactical sensors _____

_____ f1. the CCS to receive/relay of information between (vertical) and within (horizontal) echelons _____

_____ g1. the CCS to control multi-level security (MLS)--SCI and collateral traffic _____

_____ h1. the ACE to support COMINT _____

_____ i1. the ACE to support ELINT _____

_____ j1. the ACE to support CI/HUMINT _____

_____ k1. the ACE to support Measurement and Signature Intelligence (MASINT) _____

_____ l1. the ACE to support Open Source Intelligence (OSINT) _____

_____ m1. the ACE to support All Source Fusion _____

_____ n1. the ACE to support Situation Development _____

_____ o1. the ACE to support IPB _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Manpower

Y/N

Rating

14 (cont). Have been required to perform one or more tasks or operations with _____ that required an additional Team Member.

_____	p1. the ACE to support Target Identification	_____
_____	q1. the ACE to support Target Refinement	_____
_____	r1. the ACE to support Target Nomination	_____
_____	s1. the ACE to support ISR requirements	_____
_____	t1. the ACE to support Asset Management Responsibilities	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Personnel

Y/N

Rating

15. Required to perform tasks or operations with _____
that was outside of "normal" duties for my MOS and skill level.

_____ a1. the CCS for front end communications _____

_____ b1. the CCS to interface between Block II ACE All Source and
communication systems with the CCS _____

_____ c1. the CCS to interface between Block II ACE Single Source and
communication systems _____

_____ d1. the CCS to interface between Block II ACE All Source and
forward tactical sensors _____

_____ e1. the CCS to interface between Block II ACE Single Source
and forward tactical sensors _____

_____ f1. the CCS to receive/relay of information between (vertical) and
within (horizontal) echelons _____

_____ g1. the CCS to control multi-level security (MLS)--SCI and collateral
traffic _____

_____ h1. the ACE to support COMINT _____

_____ i1. the ACE to support ELINT _____

_____ j1. the ACE to support CI/HUMINT _____

_____ k1. the ACE to support Measurement and Signature Intelligence
(MASINT) _____

_____ l1. the ACE to support Open Source Intelligence (OSINT) _____

_____ m1. the ACE to support All Source Fusion _____

_____ n1. the ACE to support Situation Development _____

_____ o1. the ACE to support IPB _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Personnel

Y/N

Rating

15 (cont) Required to perform tasks or operations with _____
that was outside of "normal" duties for my MOS and skill level.

_____ p1. the ACE to support Target Identification _____

_____ q1. the ACE to support Target Refinement _____

_____ r1. the ACE to support Target Nomination _____

_____ s1. the ACE to support ISR requirements _____

_____ t1. the ACE to support Asset Management Responsibilities _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Human Factors Engineering--Procedures

<u>Y/N</u>		<u>Rating</u>
	16. Have found procedures related to operation of _____ that were unnecessarily difficult, complicated or "unfriendly".	
_____	a1. the CCS for front end communications	_____
_____	b1. the CCS to interface between Block II ACE <u>All Source</u> and <u>communication systems</u> with the CCS	_____
_____	c1. the CCS to interface between Block II ACE <u>Single Source</u> and <u>communication systems</u>	_____
_____	d1. the CCS to interface between Block II ACE <u>All Source</u> and <u>forward tactical sensors</u>	_____
_____	e1. the CCS to interface between Block II ACE <u>Single Source</u> and <u>forward tactical sensors</u>	_____
_____	f1. the CCS to receive/relay of information <u>between</u> (vertical) and <u>within</u> (horizontal) echelons	_____
_____	g1. the CCS to control multi-level security (MLS)--SCI and collateral traffic	_____
_____	h1. the ACE to support COMINT	_____
_____	i1. the ACE to support ELINT	_____
_____	j1. the ACE to support CI/HUMINT	_____
_____	k1. the ACE to support Measurement and Signature Intelligence (MASINT)	_____
_____	l1. the ACE to support Open Source Intelligence (OSINT)	_____
_____	m1. the ACE to support All Source Fusion	_____
_____	n1. the ACE to support Situation Development	_____
_____	o1. the ACE to support IPB	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Human Factors Engineering--Procedures

Y/N

Rating

16 (cont) Have found procedures related to operation of _____
that were unnecessarily difficult, complicated or "unfriendly".

_____ p1. the ACE to support Target Identification _____

_____ q1. the ACE to support Target Refinement _____

_____ r1. the ACE to support Target Nomination _____

_____ s1. the ACE to support ISR requirements _____

_____ t1. the ACE to support Asset Management Responsibilities _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Human Factors Engineering: Software

<u>Y/N</u>		<u>Rating</u>
	17. Have found software problems associated with operation of _____.	
_____	a1. the CCS for front end communications	_____
_____	b1. the CCS to interface between Block II ACE <u>All Source</u> and <u>communication systems</u> with the CCS	_____
_____	c1. the CCS to interface between Block II ACE <u>Single Source</u> and <u>communication systems</u>	_____
_____	d1. the CCS to interface between Block II ACE <u>All Source</u> and <u>forward tactical sensors</u>	_____
_____	e1. the CCS to interface between Block II ACE <u>Single Source</u> and <u>forward tactical sensors</u>	_____
_____	f1. the CCS to receive/relay of information <u>between</u> (vertical) and <u>within</u> (horizontal) echelons	_____
_____	g1. the CCS to control multi-level security (MLS)--SCI and collateral traffic	_____
_____	h1. the ACE to support COMINT	_____
_____	i1. the ACE to support ELINT	_____
_____	j1. the ACE to support CI/HUMINT	_____
_____	k1. the ACE to support Measurement and Signature Intelligence (MASINT)	_____
_____	l1. the ACE to support Open Source Intelligence (OSINT)	_____
_____	m1. the ACE to support All Source Fusion	_____
_____	n1. the ACE to support Situation Development	_____
_____	o1. the ACE to support IPB	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Human Factors Engineering: Software

Y/N

Rating

17. Have found software problems associated with operation of
_____.

_____ p1. the ACE to support Target Identification _____

_____ q1. the ACE to support Target Refinement _____

_____ r1. the ACE to support Target Nomination _____

_____ s1. the ACE to support ISR requirements _____

_____ t1. the ACE to support Asset Management Responsibilities _____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

<u>Y/N</u>	<u>Function Focus: Human Factors Engineering: Placement</u>	<u>Rating</u>
	18. Have found that placement of equipment, switches or indicators in _____ made access or use difficult.	
_____	a1. the CCS for front end communications	_____
_____	b1. the CCS to interface between Block II ACE <u>All Source</u> and <u>communication systems</u> with the CCS	_____
_____	c1. the CCS to interface between Block II ACE <u>Single Source</u> and <u>communication systems</u>	_____
_____	d1. the CCS to interface between Block II ACE <u>All Source</u> and <u>forward tactical sensors</u>	_____
_____	e1. the CCS to interface between Block II ACE <u>Single Source</u> and <u>forward tactical sensors</u>	_____
_____	f1. the CCS to receive/relay of information <u>between</u> (vertical) and <u>within</u> (horizontal) echelons	_____
_____	g1. the CCS to control multi-level security (MLS)--SCI and collateral traffic	_____
_____	h1. the ACE to support COMINT	_____
_____	i1. the ACE to support ELINT	_____
_____	j1. the ACE to support CI/HUMINT	_____
_____	k1. the ACE to support Measurement and Signature Intelligence (MASINT)	_____
_____	l1. the ACE to support Open Source Intelligence (OSINT)	_____
_____	m1. the ACE to support All Source Fusion	_____
_____	n1. the ACE to support Situation Development	_____
_____	o1. the ACE to support IPB	_____
_____	p1. the ACE to support Target Identification	_____

1 = Completely Disagree
2 = Strongly Disagree

3 = Generally Disagree
4 = Generally Agree

5 = Strongly Agree
6 = Completely Agree

9 = Unknown

Function Focus: Human Factors Engineering: Placement

Y/N

Rating

18. Have found that placement of equipment, switches or indicators
in _____ made access or use difficult.

_____ q1. the ACE to support Target Refinement _____

_____ r1. the ACE to support Target Nomination _____

_____ s1. the ACE to support ISR requirements _____

_____ t1. the ACE to support Asset Management Responsibilities _____

[illegible][illegible][illegible][illegible]

Appendix I. Noise and Temperature Measurements in and Around the HETS M1070 Tractor

This appendix appears in its original form, without editorial change.

TABLE D-15. ENVIRONMENTAL DATA BASED ON
AMBIENT TEMPERATURES

Reading	Sample Size	Mean	Std dev
Ambient temperature of 51° to 60°			
Cab temperature (° F)	225	68.36	7.82
Cab noise (dB)	225	78.27	5.49
Ambient temperature	225	52.76	3.49
Relative humidity (pct)	225	61.00	1.72
Ambient temperature of 61° to 70°F			
Cab temperature (° F)	180	79.91	6.89
Cab noise (dB)	180	79.63	5.26
Ambient temperature	180	68.08	2.26
Relative humidity (pct)	180	57.08	1.39
Ambient temperature of 71°to 80° F			
Cab temperature (° F)	180	89.97	5.69
Cab noise (dB)	180	79.49	4.70
Ambient temperature	180	76.33	2.63
Relative humidity (pct)	180	56.00	0.00
Ambient temperature of 81° to 90° F			
Cab temperature (° F)	180	94.52	6.29
Cab noise (dB)	180	78.88	5.43
Ambient temperature	180	82.33	1.38
Relative humidity (pct)	180	55.67	1.25

NOTE: Army standards state that hearing protection is recommended
When noise levels exceed 85 decibels. Temperature is considered
excessive when internal temperatures are 10° higher than the
ambient temperature.

TABLE D-16. M1070 TRACTOR (CAB) TEMPERATURE AND
NOISE FOR EACH WINDOW POSITION

Window position	Temperature (° F)			Noise levels (db)		
	Sample size	Mean	Std dev	Sample size	Mean	Std dev
Closed	255	85.67	11.58	255	78.55	5.05
Half open	255	83.30	12.17	255	78.93	5.13
Open	255	77.99	12.18	255	79.56	5.57

TABLE D-17. M1070 TRACTOR (CAB) TEMPERATURE AND NOISE WHILE TRAVELING AT DIFFERENT SPEEDS

Reading	Sample Size	Mean	Std dev
0 miles per hour speed			
Cab temperature (° F)	255	79.11	15.23
Noise level (dB)	255	71.51	2.00
20 miles per hour speed			
Cab temperature (° F)	180	83.04	10.91
Noise level (dB)	180	81.99	1.96
30 miles per hour speed			
Cab temperature (° F)	180	83.56	10.72
Noise level (dB)	180	82.07	2.10
40 miles per hour speed			
Cab temperature (° F)	180	84.38	10.56
Noise level (dB)	180	82.36	2.16

TABLE D-18. M1070 TRACTOR TEMPERATURE AND NOISE LEVEL FOR DIFFERENT POSITIONS IN CAB

Position	Temperature (° F)			Noise levels (dB)		
	Sample Size	Mean	Std dev	Sample Size	Mean	Std dev
Floor (near driver's feet)	153	82.95	12.20	153	79.35	5.03
Driver's waist level	153	82.19	12.11	153	78.59	5.29
Driver's head level (window side)	153	80.69	12.06	153	78.84	5.56
Driver's head level (doghouse side)	153	84.83	13.28	153	79.28	4.88
Floor near assistant driver's feet	153	80.95	11.95	153	79.00	5.55

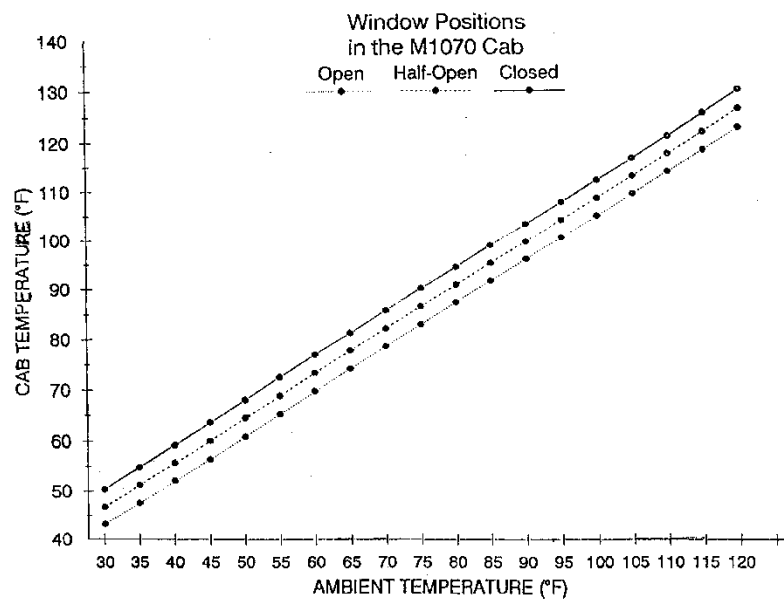


Figure 3. Mean Predicted Cab Temperature at Driver's Head Level Between Driver and Assistant Driver with Changes in Ambient Temperature and Amount of Cab Window Closure.

**Appendix J. MANPRINT Biographical Questionnaire: Enhanced Position
Location Reporting System (EPLRS)**

This appendix appears in its original form, without editorial change.

ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

PLAYER/MAINTAINER

MANPRINT BIOGRAPHICAL QUESTIONNAIRE

INFORMATION PRIVACY ACT STATEMENT

A. Authority: 5 USC 301, 10 USC 3012, Authority for Secretary of the Army to Issue ARs; 44 USC 3101, Authority for Collecting Necessary Data.

B. Principal Purpose: To collect data to evaluate the effectiveness of soldiers with different backgrounds to operate and maintain EPLRS.

C. Routine Uses: The data collected are to be used for research purposes only. They will not become a part of any individual's record and will not be used in whole or part in making any determination about an individual. Full confidentiality of responses will be maintained in the processing of these data.

D. Mandatory or Voluntary Disclosure and Effect on Individual Not Providing Information: Voluntary - Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals not providing all or any part of the information.

This notice may be detached from the rest of this form and retained by the individual answering the questionnaire if so desired.

ENHANCED POSITION LOCATION REPORTING SYSTEM (EPLRS)

MANPRINT BIOGRAPHICAL PROFILE

Purpose: This form is important because it is about you! The data you provide will help Department of Defense decision-makers evaluate how effectively EPLRS has been designed for soldiers like you. To do this, we need you to complete this for accurately. None of your individual data will be provided to your chain of command nor entered in your personnel files. Your responses will be kept confidential.

Instructions: Read each item carefully and enter your response in the item space provided or circle the appropriate response.

1. NAME: _____
(Please print)

2. PIN NO. ____ _

3. MOS:

a. Primary ____ _

b. Secondary ____ _

c. Duty ____ _

4. Time in primary MOS: _____
(months)

5. Duty in test:

1 = Net Control Station (NCS) Operator

2 = Net Control System(NCS) Maintainer

3 = Radio Set (RS) Operator

4 = Radio Set (RS) Maintainer

5 = EPLRS Ground Reference Unit (EGRU)
Operator

6 = EPLRS Test Set (ETS) DS Maintenance
Support

7 = System Management

6. Paygrade: Please indicate:

E- ____

OR

O- ____

7. a. Time in Grade _____
(months)

8. Reenlistment

a. Plan to reenlist:

1 = Yes 2 = No

b. Are you sure?

1 = Yes 2 = No

9. Gender: 1 = Male 2 = Female

10. In my immediate family, I was the

1 = Only child

2 = Oldest child

3 = Second or third oldest

4 = Fourth or fifth oldest

5 = More than fifth oldest

11. Marital Status:

12. Race:

1 = Single

2 = Married

3 = Separated

4 = Divorced

1 = White

2 = Black

3 = Hispanic

4 = American Indian/Alaskan

5 = Asian/Pacific Islander

6 = Other/unknown

<p>13. Education:</p> <p>1 = No high school degree 2 = High school diploma 3 = GED 4 = Some college (1-2 yrs) /technical school 5 = Two year college degree 6 = Three or more years college, no degree 7 = Four year college degree</p>	<p>14. Place and Date of Birth:</p> <p>a. City _____</p> <p>b. State _____</p> <p>c. Country _____</p> <p>d. Date ____ ____ ____ dd mm yy</p>
<p>15. Size of community I grew up in:</p> <p>1 = Rural 2 = Town (less than 10,000) 3 = Town (10,000 - 90,000) 4 = City (90,000 - 200,000) 5 = City (200,001 - 1 million) 6 = More than 1 million</p>	<p>16. Handedness - write with:</p> <p>1 = Right 2 = Left 3 = Both equally well</p>
<p>17. Eye Dominance:</p> <p>1 = Right 2 = Left 3 = Both</p>	<p>18. Height (inches) _____</p>
<p>19. Weight (pounds): _____</p>	<p>20. Wear glasses:</p> <p>1 = Yes 2 = No 3 = Reading only</p>
<p>21. Hearing:</p> <p>a. Any impairment? 1 = Yes 2 = No</p> <p>b. Corrected? 1 = Yes 2 = No</p> <p>c. If yes to b, how? _____ _____</p>	<p>22. Physical Profile:</p> <p>a. Do you have one? 1 = Yes 2 = No</p> <p>b. If <u>Yes</u> to <u>a</u>, what is it for? _____</p> <p>c. If <u>Yes</u> to <u>a</u>, is it: 1 = Temporary 2 = Permanent</p>
<p>23. Father's occupation while growing up: _____</p>	<p>24. Mother's occupation while growing up: _____</p>
<p>25. a. Language used in home while growing up?</p> <p>1 = <u>Only</u> English 2 = <u>Mainly</u> English 3 = <u>Occasionally</u> English 4 = <u>Seldom</u> English 5 = <u>Never</u> English</p> <p>b. Other language used? _____</p>	

26. Compared to others in high school, I thought of myself as:

- 1 = Smarter than most other students
- 2 = As smart as most students
- 3 = Not as smart as most students

27. Before joining the military, how often did you read books or magazines of your own choosing? (Do not Include newspapers or comics.)

- 1 = Practically never
- 2 = Seldom
- 3 = Occasionally, such as once per week
- 4 = Often, such as at least once a day
- 5 = Very often, such as more than once a day

28. In general, I'm the type of person who prefers to do a job:

- 1 = Usually by myself
- 2 = Often by myself
- 3 = Sometimes by myself, sometimes with others
- 4 = Often with others
- 5 = Usually with others

29. Who succeeds often depends on luck, such as, who was in the right place at the right time:

- 1 = That's almost always true
- 2 = That's often true
- 3 = Sometimes that's true
- 4 = That's seldom true
- 5 = That's never true

30. Compared to others in athletic ability, I am:

- 1 = Less athletic than most people in my age group
- 2 = Average in athletic ability
- 3 = Slightly more athletic than most people in my age group
- 4 = In the top 15% of people in my age group
- 5 = In the top 1% of people in my age group

31. Compared to other, I generally do my job:

- 1 = Slower than most performers
- 2 = Slightly slower than most performers
- 3 = About average
- 4 = Slightly faster than most performers
- 5 = Faster than most performers

32. Compared to others, I generally do my job:

- 1 = More correctly than most performers
- 2 = Slightly more correctly than most performers
- 3 = About average
- 4 = Slightly less correctly than most performers
- 5 = Less correctly than most performers

33. To feel really good mentally, I require:

- 1 = 4 hours sleep or less
- 2 = 5 to 7 hours sleep
- 3 = 8 hours sleep
- 4 = 9 hours sleep
- 5 = 10 or more hours sleep

34. To be successful at difficult jobs means sometimes you have to take risks.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

35. Nothing makes me more angry than equipment which does NOT work reliably.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

36. It is hard to exert job effort if you work alone.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

37. In important matters, I usually:

- 1 = Rely on my friends for information
- 2 = Rely on my family for information
- 3 = Rely on some knowledgeable expert
- 4 = Rely on myself to find things out

38. How well I do my new job significantly impacts the jobs of others.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

39. Most people I work with would rather take more time to do a job right, than less time to do a "quick and dirty, it's good enough job"

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

40. Most jobs are dull and boring.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

41. Only I am responsible for what I will be.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

42. I know if I persist, I can make unreliable equipment work properly

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

43. I'd rather be recognized as a "star" on a losing team than an unrecognized member of a winning team.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

44. People make their own breaks in life.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

45. My greatest source of job satisfaction comes primarily from:

- 1 = The people I work with
- 2 = The high tech equipment
- 3 = The sense of accomplishing something important
- 4 = Being successful
- 5 = The paycheck

46. When traveling to a new city, it's easy to get lost even when you have a map.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

47. People count on me; I feel like I'm really needed at work.

- 1 = Strongly disagree
- 2 = Disagree
- 3 = I am uncertain
- 4 = Agree
- 5 = Strongly agree

48. My greatest job strength is my:

- 1 = Physical endurance
- 2 = Capability to learn
- 3 = "Can-do" attitude
- 4 = Level of knowledge
- 5 = Level of "know-how" experience

49. If money or family obligations were not an obstacle, I would really like to be a:

- 1 = Race car driver
- 2 = Helicopter or jet pilot
- 3 = An accountant
- 4 = Computer scientist
- 5 = Lawyer
- 6 = Physician
- 7 = Scientist or engineer
- 8 = Professor
- 9 = Other _____

50. I intend to achieve the following end of training course score:

- 1 = 100%
- 2 = 90-99%
- 3 = 85-89%
- 4 = 80-84%
- 5 = 70-79%
- 6 = below 70%

51. How happy are you in being selected to participate in this test?

- 1 = Very happy
- 2 = Happy
- 3 = Neither happy or unhappy
- 4 = Unhappy
- 5 = Very unhappy

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